

Petitioners: National Waste & Recycling Association,
Solid Waste Association of North America,
Republic Services, Inc.,
Waste Management, Inc., and
Waste Management Disposal Services of Pennsylvania, Inc.

**PETITION FOR RULEMAKING, RECONSIDERATION,
AND ADMINISTRATIVE STAY**

DOCKET I.D. EPA-HQ-OAR-2003-0215; EPA-HQ-OAR-2014-0451

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I. Introduction

On August 29, 2016, the Environmental Protection Agency (“EPA” or “Agency”) promulgated final rules entitled, *Standards of Performance for Municipal Solid Waste Landfills*, 81 Fed. Reg. 59332-59384 (Aug. 29, 2016) (“Subpart XXX”), and *Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills*, 81 Fed. Reg. 59276-59330 (Aug. 29, 2016) (“Subpart Cf”) (collectively referred to as the “Final Rules”). Prior to publication of the Final Rules, EPA issued the following notices of proposed rulemaking: *Standards of Performance for Municipal Solid Waste Landfills*, 79 Fed. Reg. 41795-41843 (July 17, 2014) and *Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills; Advanced Notice of Proposed Rulemaking*, 79 Fed. Reg. 41771-41793 (July 17, 2014) (collectively referred to as “2014 Proposal”). A year later, EPA issued supplemental proposals, entitled *Standards of Performance for Municipal Solid Waste Landfills*, 80 Fed. Reg. 52162-52168 (Aug. 27, 2015) and *Emission Guidelines, Compliance Times, and Standards of Performance for Municipal Solid Waste Landfills; Proposed Rule*, 80 Fed. Reg. 52100-52162 (Aug. 27, 2016) (collectively referred to as “2015 Supplemental Proposal”). The Final Rules are intended to update existing rules regulating municipal solid waste (“MSW”) landfills – the Standards of Performance for Municipal Solid Waste Landfills at 40 C.F.R. Part 60, Subpart WWW (“Subpart WWW”) and the Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills at 40 C.F.R. Part 60, Subpart Cc (“Subpart Cc”).

Pursuant to Section 553(e) of the Administrative Procedure Act (“APA”), 5 U.S.C. § 553(e), the National Waste & Recycling Association, the Solid Waste Association of North America, Republic Services, Inc., Waste Management, Inc., and Waste Management Disposal Services of Pennsylvania, Inc. (collectively referred to as “Petitioners”) request that EPA

immediately undertake a rulemaking to revise the Final Rules, as further specified in Section III, below. Additionally, pursuant to Section 307(d)(7)(B) of the Clean Air Act, 42 U.S.C. § 7607(d)(7)(B) (“CAA” or “Act”), Petitioners request that EPA reconsider certain aspects of the Final Rules, as set forth in Section IV, below. Finally, Petitioners request that EPA immediately grant Petitioners’ request for administrative stay of the Final Rules, as more fully detailed in Section V, below, in order to suspend the effectiveness of the Final Rules and to allow the Agency time to correct the significant substantive and procedural flaws identified in this Petition.

II. Petitioners’ Background

The National Waste & Recycling Association (“NWRA”) is a trade association that represents private-sector waste and recycling companies in the United States, and manufacturers and service providers who do business with those companies. NWRA’s members operate in all 50 states and the District of Columbia. NWRA provides leadership, education, research, advocacy, and safety expertise to promote North American waste and recycling industries, serve as their voice, and create a climate where members prosper and provide safe, economically sustainable, and environmentally sound services.

The Solid Waste Association of North America (“SWANA”) is a California nonprofit public benefit corporation. Its membership includes more than 8,500 public and private sector professionals committed to advancing from solid waste management to resource management through their shared emphasis on education, advocacy and research. For more than 50 years, SWANA has been the leading professional association in the solid waste management field.

Republic Services, Inc.¹ (“Republic”) serves residential, municipal, commercial, and industrial customers nationwide and is dedicated to providing dependable solutions for recycling and waste challenges. Republic provides reliable service through 340 collection operations, 201 transfer stations, 193 active landfills, 67 recycling centers, eight treatment, recovery and disposal facilities, 12 salt water disposal wells, and 69 landfill gas and renewable energy projects across 41 states and Puerto Rico. Republic maintains approximately 125 closed MSW landfills. Republic is a holding company and all operations are conducted by its subsidiaries.

Waste Management, Inc.² (“WM”) is North America’s leading provider of integrated waste management and environmental solutions. Through its network of subsidiaries, including Waste Management Disposal Services of Pennsylvania, Inc., WM operates 244 active, solid waste landfills, and at 136 of them, operates beneficial landfill-gas-to energy (“LFGTE”) projects. These projects produce renewable electricity, renewable fuel for stationary facilities, and renewable transportation fuel for vehicles, including about 1000 of WM’s own refuse collection trucks. WM maintains approximately 200 closed MSW landfills.

Petitioners have engaged with EPA during the rulemaking period and submitted comments on both the 2014 Proposal and 2015 Supplemental Proposal. *See* NWRA & SWANA, Comments on 2014 Proposal, Docket ID EPA-HQ-OAR-2003-0215-0108 & EPA-HQ-OAR-2014-0451-0062 (“NWRA & SWANA 2014 Comments”); NWRA & SWANA, Comments on 2015 Supplemental Proposal, Docket ID EPA-HQ-OAR-2003-0215-0196 & EPA-HQ-OAR-2014-0451-0186 (“NWRA & SWANA 2015 Comments”); Republic Services, Comments on

¹ Republic Services, Inc. is a holding company and all operations are conducted by its wholly-owned and majority-owned subsidiaries. This Petition is being filed by Republic Services, Inc. on behalf of these consolidated subsidiaries (collectively “Republic”).

² Waste Management, Inc., a Delaware Corporation, is a holding company and all operations are conducted by its wholly-owned and majority-owned subsidiaries. This Petition is being filed by Waste Management, Inc. on behalf of these consolidated subsidiaries (collectively “Waste Management” or “WM”).

Proposed Standards of Performance for Municipal Solid Waste Landfills, Docket ID EPA-HQ-OAR-2003-0215-0099 (“Republic 2014 NSPS Comments”); Republic Services, Comments on Supplemental Proposal – Standards of Performance for Municipal Solid Waste Landfills, Docket ID EPA-HQ-OAR-2003-0215-0202 (“Republic 2015 NSPS Comments”); Republic Services, Comments on the Advanced Notice of Proposed Ruling Making for Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills, Docket ID EPA-HQ-OAR-2014-0451-0061 (“Republic 2014 EG Comments”); Republic Services, Comments on Proposed Rules; Emission Guidelines, Compliance Times, and Standards of Performance for Municipal Solid Waste Landfills, Docket ID EPA-HQ-OAR-2014-0451-0176 (“Republic 2015 EG Comments”); Waste Management, Inc., Comments on 2014 Proposal, Docket ID EPA-HQ-OAR-2003-0215-0100 & (“WM 2014 Comments”); Waste Management, Inc., Comments on 2015 Supplemental Proposal, Docket ID EPA-HQ-OAR-2003-0215-0198 & EPA-HQ-OAR-2014-0451-0192 (“WM 2015 Comments”). Additionally, WM, Republic, and other industry stakeholders have provided supplemental information relating to implementation of Subparts WWW and Cc, which can be found in the docket for Subpart XXX at the following Docket ID numbers: EPA-HQ-OAR-2003-0215-0003, EPA-HQ-OAR-2003-0215-0007, EPA-HQ-OAR-2003-0215-0053, EPA-HQ-OAR-2003-0215-0055, EPA-HQ-OAR-2003-0215-0057, EPA-HQ-OAR-2003-0215-0058.

III. Petition for Rulemaking

Petitioners ask EPA to initiate rulemaking to address certain aspects of EPA’s Final Rules that were raised in comments at proposal. Under Section 553(e) of the APA, any party can ask any agency to issue, amend, or repeal a rule. 5 U.S.C. § 553(e). Although Section 307(d) of the CAA states that Section 553 of the APA shall not apply to the promulgation or revision of

most nationally-applicable CAA rules, including NSPS or EG rules,³ the federal courts continue to recognize the right of the public to petition EPA for rulemaking under the CAA.⁴

The Petitioners recognize that the federal courts' authority to review EPA decisions on whether to grant or deny petitions for rulemaking is "extremely limited and highly deferential." *See WildEarth Guardians v. EPA*, 751 F.3d 649 (D.C. Cir. 2014) (denying a challenge to EPA's decision to deny a petition for rulemaking under Section 111 on the basis of ongoing budget uncertainties and limited resources). Nevertheless, Petitioners believe that the Final Rules are fundamentally flawed, are inconsistent with the structure and purpose of Section 111 of the CAA, and therefore warrant revision. Accordingly, Petitioners submit this petition for rulemaking in the hope that EPA will recognize that numerous flaws remain unaddressed, despite timely comments raising those concerns, and initiate a rulemaking process to address them. Since Petitioners believe that the issues for which rulemaking is requested below can be more fully vetted through an official notice and comment rulemaking process, the issues are described here only in general terms. Petitioners look forward to providing greater detail and proposed solutions for the concerns identified below during the rulemaking process. Nevertheless, because Petitioners did comment on the issues identified in this Section III during the rulemaking process for the Final Rule, such issues are also ripe for judicial review. 42 U.S.C. § 307(d).

A. Overlapping Applicability of Old and New Subparts

In promulgating the Final Rules, the Agency has created an unintelligible web of standards that apply to MSW landfills in contravention of Section 111, consisting of: (1) old

³ 42 U.S.C. § 307(d).

⁴ *Massachusetts v. EPA*, 415 F.3d 50, 53 (D.C. Cir. 2005) (noting that Section 307 authorizes judicial review of EPA's decision to deny a petition for rulemaking), *rev'd and remanded on other grounds by* 549 U.S. 497, 527 (2007) (referring to the filing of a petition for rulemaking under the CAA as "procedural right" and confirming that the denial of such a petition may be addressed via judicial review under Section 307). *Accord Friends of the Earth v. EPA*, 934 F. Supp.2d 40, 54 (D.D.C. 2013) ("EPA is required to respond to a citizen petition for rulemaking.") (citing *Massachusetts v. EPA*).

Subparts WWW and Cc, which have not been expressly superseded; (2) 40 C.F.R. Part 63, Subpart AAAA (“the Landfill NESHAP” or “Subpart AAAA”), which continues to rely on Subparts WWW and Cc for its substantive compliance obligations; and (3) new Subparts XXX and Cf, which were intended to update the standards for landfills but were adopted as free-standing and separate subparts.

Despite many comments asking EPA to address the potential overlap among its old rules, the new rules, and the Landfill NESHAP (which requires compliance with Subparts WWW and Cc), EPA did not address that critical concern. For example, WM’s comments expressly asked “how EPA’s proposal to correct and clarify the regulatory language based on Subpart WWW would affect Subpart WWW itself, and importantly, compliance obligations for existing facilities.” WM 2014 Comments at 3-4. Republic similarly commented that “EPA must also address the compliance obligations that may result for sites that must transition from Subpart WWW to Subpart XXX following a modification.” Republic 2015 EG Comments at 33. Both companies also commented that the decision to adopt entirely separate subparts for the revised rules (Subparts XXX and Cf) ignores the fact that the Landfill NESHAP continues to require compliance with the old subparts (Subparts WWW and Cc). WM 2015 Comments at 70; Republic 2015 EG Comments at 33.

Despite these comments, EPA adopted applicability provisions in its new subparts that fail to take into account the applicability provisions of the old subparts and the Landfill NESHAP, which EPA did not revise. EPA acknowledges that the Agency could have accomplished the updates to Subparts WWW and Cc merely by updating those old subparts. *See* 81 Fed. Reg. at 59333, FN 3. Such a decision would have avoided the confusion that has resulted. Nevertheless, the Agency decided instead to forge a more complicated path by

updating Subparts WWW and Cc via promulgation of two new and separate subparts. As a result, the applicability provisions for all five rules—the old and new NSPS and EG and the Landfill NESHAP—are now codified as follows:

- Subpart Cc: landfills constructed / modified “before May 30, 1991”⁵
- Subpart WWW: landfills constructed / modified “on or after May 30, 1991”⁶
- Subpart Cf: landfills constructed / modified “on or before July 17, 2014”⁷
- Subpart XXX: landfills constructed / modified “after July 17, 2014”⁸
- Subpart AAAA: requiring landfills that are major sources or area sources meeting certain design capacity thresholds to comply with WWW or Cc⁹

Because of the overlapping applicability provisions, a landfill will necessarily meet the applicability criteria of more than one subpart, as illustrated in the table provided below:

Landfills that were last constructed / modified ...	Emission Guidelines		NSPS	
	Cc (old)	Cf (new)	WWW (old)	XXX (new)
... before May 30, 1991	×	×		
... on or between May 30, 1991 & July 17, 2014		×	×	
... after July 17, 2014			×	×

This overlapping applicability is unreasonable because on their face the rules would require landfills to simultaneously comply with different and overlapping provisions from either the new or old subparts, forcing Petitioners to engage in two different sets of activities to ensure compliance with the new and old rules. In doing so, EPA is forcing landfills to meet all provisions of the Final Rules without allowing landfills to benefit from the regulatory provisions that EPA intended to update and streamline, since the old rules will still apply. As just one

⁵ 40 C.F.R. § 60.32c.

⁶ 40 C.F.R. § 60.750.

⁷ 40 C.F.R. § 60.31f.

⁸ 40 C.F.R. § 60.760.

⁹ 40 C.F.R. §§ 63.1935; 63.1955.

example, EPA eliminated the wellhead oxygen parameter as a basis for requiring corrective action in Subparts XXX and Cf, but Subparts WWW and Cc—one of which will still apply to all landfills—will continue to require all landfills to take corrective action for oxygen exceedances.

The overlapping applicability provisions contravene the CAA because they have the effect of simultaneously regulating some landfills as both “new” landfills subject to a NSPS and “existing” landfills subject to an EG. That result is prohibited by the CAA, which defines the two terms “new source” and “existing source” in mutually exclusive fashion and establishes separate programs for “new” and “existing” sources—Section 111(b) for new sources, and Section 111(d) for existing sources. Given that the definition of “existing source” is “any stationary source *other than* a new source,” a single source cannot be regulated simultaneously as both a “new source” under a Section 111(b) NSPS and an “existing source” under a Section 111(d) EG. 42 U.S.C. § 7411(a)(6). But that is exactly the result of EPA’s failure to properly address the overlapping applicability of its old and new NSPS and EG for some landfills, as illustrated above.

Likewise, EPA failed to address the fact that the Landfill NESHAP still requires compliance with the substantive obligations of Subparts WWW and Cc. Despite many comments identifying the inconsistency between the proposed rules and the Landfill NESHAP, EPA completely failed to address these comments in the Final Rules.

EPA’s own statements confirm that the Agency did not intend for landfills to comply with both the old and new rules simultaneously. The most obvious indication of EPA’s intent with the Final Rules is EPA’s description of them as a “revision,” “update,” or “changes” to the old rules. *See e.g.*, 81 Fed. Reg. at 59276 (“Based on this review, the EPA has determined that it is appropriate to revise the Emission Guidelines . . .”). Even more explicitly, the preambles

explain that EPA believes “the most appropriate way to proceed is to establish a new subpart that includes both the verbatim restatement of *certain provisions* in the existing Emission Guidelines and revisions to, or the addition of, *other provisions*.” *Id.* at 59286. This statement confirms that EPA did not intend for all provisions of Subpart WWW and Cc to continue to apply as currently written, but EPA’s Final Rules do not reflect that intent. EPA even justified its decision to revise Subparts WWW & Cc by quoting Supreme Court precedent holding that “[r]egulatory agencies do not establish rules of conduct to last forever,” even though EPA has failed in this instance to adopt any language to terminate the effectiveness of such standards. *Id.* at 59277 (citing *Am. Trucking Ass’n v. Atchison, Topeka & Santa Fe Ry.*, 387 U.S. 397, 416 (1967)).

EPA’s failure to enact appropriate applicability provisions in its Final Rules renders them unlike any other NSPS revision that EPA has ever adopted. All of the other NSPS revisions that EPA has adopted make clear that only one NSPS subpart should apply at a time (and EPA has never before revised an EG). For example, when EPA adopted a new standard for stationary combustion turbines in Subpart KKKK, EPA confirmed that sources subject to the new Subpart KKKK provisions would be “exempt” from the provisions of Subpart GG. 40 C.F.R. § 60.4305 (“Stationary combustion turbines regulated under this subpart [KKKK] are exempt from the requirements of subpart GG of this part.”). Similarly, after EPA adopted a new standard in Subpart Da for fossil fuel-fired steam generators, EPA revised the old Subpart D to make clear that any facility subject to the new standard “is not subject” to the old standard. 40 C.F.R. § 60.40 (“Any facility subject to . . . subpart Da . . . of this part is not subject to this subpart.”). Many other subparts contain language of similar effect to avoid the overlap of old and newly revised standards. *See, e.g.*, 40 C.F.R. Part 60, Subparts Ea, Eb, K, Ka, Kb, AA, AAa, J, Ja, VV,

VVa, GGG, GGGa, AAAA, BBBB, CCCC, DDDD, EEEE, FFFF. The only instance of EPA adopting a new subpart without expressly addressing the applicability of an old subpart that Petitioners were able to identify is Subpart TTTT, in which EPA adopted standards for electric generating units, but in that case no overlap occurred because Subpart TTTT only regulates an entirely new pollutant—greenhouse gas emissions—that was not covered by the preexisting standards.

EPA’s error in failing to address the overlapping applicability of the Final Rules, Subparts WWW and Cc, and the Landfill NESHAP requires an additional rulemaking action. Only through further revisions to its regulations can EPA make sufficiently clear that only the newly “revised” and “updated” versions of the regulations apply, as EPA originally intended. In the case of the Landfill NESHAP, EPA must acknowledge that compliance with the Final Rules satisfies the sections of Subpart AAAA that currently reference Subparts WWW and Cc. When EPA promulgated the Landfill NESHAP, the Agency concluded that substantive provisions of Subparts WWW and Cc were the appropriate basis for the rule’s MACT standard. Having now updated Subparts WWW and Cc via promulgation of the Final Rules, the Agency must carry through such updates to the Landfill NESHAP.

Certainly, if a State adopts a Section 111(d) plan for implementing the EG that confirms compliance with the new EG satisfies the old EG, and EPA approves that plan, the State may be able to resolve this overlapping applicability concern for landfills subject only to the old and new EG (i.e., those constructed and last modified prior to May 30, 1991). However, Section 111(b) does not authorize States to revise the applicability provisions of the standards that EPA has adopted for new sources. Therefore, States will not have the authority to resolve the

applicability concerns for any landfill subject to Subpart WWW, XXX, or both (i.e., those constructed and last modified on or after May 30, 1991).

When EPA initiates a rulemaking process to resolve the overlapping applicability of Subparts XXX, WWW, Cf, and Cc, and the Landfill NESHAP, EPA must also address the process by which a landfill transitions from the old rules to the new. Again, despite numerous comments requesting that EPA address the procedures and timing for transitioning to the compliance obligations of the Final Rules, EPA simply failed to respond. *See* WM 2014 Comments at 3-4; Republic 2015 EG Comments at 33. As a result, states and regulated entities are left without any direction on how to implement the new rules once they take effect. Landfills will need some time to make the changes that the Final Rules require, so a transition policy should allow a reasonable amount of time for achieving compliance.

Thus, Petitioners respectfully ask EPA to convene a notice-and-comment rulemaking action to address this overlapping applicability concern through rule revisions, accompanied by provisions that allow a reasonable time period for compliance with the new requirements.

B. Design Plan and Alternatives Approval Process

The Final Rules contain numerous and conflicting provisions addressing the need for submittal and approval of landfill gas collection and control system (“GCCS”) design plans, the obligation to operate in accordance with an approved design plan, and the potential enforcement risk for facilities that have not yet received approval of their design plan. Petitioners request that the Agency initiate a rulemaking intended to provide greater clarity for compliance obligations related to the design plan approval process.

Under Subparts WWW and Cc, Petitioners have experienced a very low rate of agency review and approval of design plans, including alternatives to the design standards and operating parameters, leaving many facilities without any certainty as to whether the design plan

requirements have been met or whether their alternatives are appropriate. At proposal, EPA solicited comments on streamlining the design plan approval process. Petitioners urged EPA to clarify and streamline these requirements, recommending that the Agency (1) establish a defined timeline for review and approval or denial of design plan submittals; and (2) establish a process for automatic approval should the Administrator or delegated authority fail to respond within the established deadline. As an alternative, Petitioners urged EPA to reexamine the need for an affirmative approval of design plans in general, noting that many EPA rules do not require approval of similar types of conceptual plans. See WM 2014 Comments at 30-35. In supplemental comments submitted to EPA, Petitioners provided numerous examples of EPA rules that do not require agency approval of analogous plans. A copy of Petitioners' Supplemental Comments¹⁰ is attached hereto at Appendix "A". (Note that these comments were provided at EPA's request.) In the Final Rules, EPA did not address Petitioners' comments and instead worsened the compliance uncertainty associated with GCCS design plan review and approval. Thus, Petitioners request that the Agency initiate a rulemaking, respond to Petitioners' comments, and provide greater clarity around compliance obligations related to the design plan approval process.

1. The Final Rules Do Not Ensure Agency Review or Approval of Design Plans

In the Final Rules, EPA definitively stated that agency approval of GCCS design plans is required. See 40 C.F.R. § 60.762(b)(2)(i) and 40 C.F.R. § 60.767(c)(4). Yet, having established in the Final Rules that design plans must be submitted for approval, EPA's approval process fails to ensure that the Agency will ever review submitted design plans, let alone approve them.

¹⁰ Petitioners note that EPA has failed to include the Supplemental Comments in Appendix A in the dockets for the Final Rules, despite requesting that Petitioners submit them. Petitioners have attached the Supplemental Comments to this Petition for the Agency's ease of review.

Specifically, section 60.767(c)(5) requires “[t]he landfill owner/operator to notify the Administrator that the design plan is completed and submit a copy of the plan’s signature page. The Administrator has 90 days to decide whether the actual design plan should be submitted for review. If the Administrator chooses to review the plan, the approval process continues as described in (c)(6) of this section.” The section thus leaves entirely to the discretion of EPA or delegated authority whether to review any submitted design plan. Section 60.767(c)(6) creates even more confusion as it consists of two contradictory sentences. The first requires that the Administrator, upon receipt of an initial or revised design plan, “[m]ust review information submitted . . . and either approve it, disapprove it, or request additional information.” But the second sentence then imposes an unacceptable enforcement risk on the landfill owner/operator in the event that “the Administrator indicates that submission is not required, or does not respond within 90 days,” by stating that “the landfill owner/operator *can* continue to implement the plan with the recognition that the owner/operator is proceeding at their own risk.” The same paradoxical provisions are reflected in Subpart Cf in Section 60.38f(d)(5) and (6).

Notwithstanding use of the word “must” in these provisions, the overall process described in (c)(5) and (6) indicates that the Agency may choose whether or not to review the design plan. This is completely at odds with the Agency’s unambiguous statements in the Final Rules requiring design plan approval. The EPA has thus created a system by which the landfill owner/operator is required to submit a design plan for agency approval, but neither EPA nor its state or local counterparts are held accountable for actually reviewing and approving or disapproving those plans. In fact, the process outlined in the Final Rules does not even require the regulatory agencies to acknowledge receipt of the plans.

2. The Final Rules Provide no Clarity on Whether Landfills Must Proceed with GCCS Installation in the Absence of Agency Approval

The Final Rules state that if the Administrator does not approve or disapprove the design plan, or request additional information within 90 days of receipt, then the owner or operator “*can*” continue with implementation of the design plan, recognizing that they would “be proceeding at their own risk.” 40 C.F.R. § 60.767(c)(6); 40 C.F.R. § 60.38f(d)(5) and (6). The language is permissive, failing to inform the regulated entity what it should or must do when the regulator fails to review and approve their plan, or to provide a path forward for obtaining plan approval should the agency be non-responsive. 40 C.F.R. § 60.767(c)(5) & § 60.38f(d)(5).

This permissive language conflicts with other provisions of the Final Rules requiring actions to be taken in conformance with an approved plan. For example, the compliance provisions in the Final Rules at Sections 60.765(b) and 60.36f(b) state that the landfill owner/operator “must place each well or design component as specified in the *approved* design plan as provided in § 60.767(c) (emphasis added).” Additionally, monitoring provisions at Sections 60.766(d) and 60.37f(d) require that a landfill owner/operator complying with the GCCS operational standards by using a device other than a non-enclosed flare, an enclosed combustor, or treatment system *must* provide information satisfactory to the Administrator, and that the Administrator must review and approve it or request additional information. Likewise, where the landfill owner/operator seeks to employ alternatives to the operational standards, test methods, compliance provisions or other aspects of the Final Rules, the landfill owner/operator *must* submit those alternatives to the Agency in the design plan. 40 C.F.R. § 60.767(c)(2) and § 60.38f(d)(2). Thus, even though key implementation requirements are contingent on design plan approval, the Final Rules do not suspend a landfill’s compliance obligations pending that

approval, leaving the landfill with little choice but to take the risk that EPA has identified in its rule language.

These contradictory requirements are paralyzing for affected facilities that have prepared and submitted GCCS design plans in good faith. In light of the requirements in the Final Rules at Sections 60.762(b)(2)(ii) and 60.33f to seek permits, award contracts, install and start up a GCCS within 30 months of the regulatory trigger event, a landfill owner or operator is placed into an untenable situation: either face potential enforcement risk for missing the 30-month compliance deadline, or face potential financial *and* enforcement risk for installing and operating a multi-million-dollar gas collection system in accordance with a design plan that is later disapproved.

3. EPA's Design Plan Approval Process Subjects Affected Facilities to Unclear Compliance Obligations and Untenable Financial and Enforcement Risk

The Final Rules' design plan approval process creates a circumstance in which affected facilities are subject to risk of enforcement regardless of which course of action they take and through no fault or failure of their own. Indeed, the Final Rules conclude the confusing design plan approval process with the following statement:

In the event that the design plan is required to be modified to obtain approval, the owner or operator must take any steps necessary to conform any prior actions to the approved design plan and any failure to do so could result in an enforcement action.

40 C.F.R. § 60.767(c)(5) and 40 C.F.R. § 38f(d)(5).

This language is unintelligible, and notably, was not included in any of EPA's rulemaking proposals. As an initial matter, EPA does not explain how one can achieve the feat of conforming prior actions to a newly imposed requirement. Second, EPA does not explain whether the resulting enforcement risk is retroactive, prospective, or both. Certainly, the threat

of retroactive enforcement for good-faith actions taken pursuant to a design plan that an agency declined to review contravenes basic principles of fairness and due process. Finally, EPA failed to even acknowledge the significant financial risk associated with installing a multi-million dollar system that may later (maybe years later) be determined insufficient. This risk is particularly relevant for landfills that propose site-specific alternatives. Indeed, the Final Rules readily acknowledge that:

Because of the many site-specific factors involved with landfill gas system design, alternative systems may be necessary. A wide variety of system designs are possible, such as vertical wells, combination horizontal and vertical collection systems or horizontal trenches only, leachate components, and passive systems.

40 C.F.R. § 60.767(c)(6) and 40 C.F.R. § 60.38f(c)(6). Thus, although EPA clearly acknowledges the need for alternative designs, and that the landfill owner/operator is required to obtain Agency approval for those designs, EPA makes no commitment to review those alternatives. EPA's response on this issue is insufficient. EPA states:

Because the initial design can significantly affect the long-term operation of the landfill GCCS, and that design is site-specific, the EPA has retained the design plan approval process to provide flexibility to the sites on designing an appropriate system, while also providing a level of regulatory oversight *before the system is installed* in order to minimize scenarios where an improperly designed system is constructed and installed.

EPA, Responses to Public Comments on EPA's Standards of Performance for Municipal Solid Waste Landfills and Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills: Proposed Rules, 965 (hereinafter "Response to Comments Document") (emphasis added). Far from minimizing these risks for regulated entities, EPA's design plan approval process creates enforcement risk where none should exist and expressly does not ensure any level of regulatory oversight before the GCCS is installed. Because the GCCS requirement is the

centerpiece of the Final Rules, ambiguity and conflicting provisions concerning GCCS design plan approval cause the Final Rules to lack the most fundamental element of a properly functioning regulatory system, which is to provide fair and timely notice of the compliance obligations to which a regulated entity is subject, in this case via approval of required regulatory documents. *See generally, United States v. Trident Seafoods*, 60 F.3d 556 (9th Cir. 1995); *Gates & Fox Co. v. OSHRC*, 790 F.3d 154 (D.C. Cir. 1986); *General Electric v. U.S. EPA*, 53 F.3d 1324 (D.C. Cir. 1995). If GCCS design plan approval is a required component of a rule, then agency review and approval or denial must also be a rule requirement, so that a regulated entity can move forward with implementation, confident that it has been apprised of its compliance obligations. The Final Rules fail to provide this essential regulatory element.

4. EPA Must Correct the Rules to Require Affirmative Agency Approval in a Timely Manner

Petitioners have observed a demonstrated failure by agencies to review, approve, or even acknowledge design plan submittals under the existing Subparts WWW and Cc. WM and Republic estimate that only about 40% of their landfills operate pursuant to an approved design plan due to lack of timely action by EPA and state authorities. Accordingly, Petitioners urge EPA to initiate a rulemaking to address this problem under the Final Rules. In that context, we again ask EPA to eliminate the need for agency review and approval of GCCS plans, which is a system that has simply not worked to date. Instead, Petitioners recommend that delegated authorities should be allowed to rely upon a licensed, third-party professional engineer (“PE”) certification of design plans and revisions in lieu of an agency review and approval process. Petitioners recommend that certified plans be maintained onsite for inspection and/or submittal to the implementing agency. This approach is consistent with sixty-two other Clean Air Act rulemakings identified in Petitioners’ Supplemental Comments attached at Appendix A.

Reliance on a certification by a licensed, third-party PE in lieu of agency approval would also be consistent with the approach EPA finalized in the Agency's recent NSPS rulemaking impacting the Oil & Natural Gas Sector. *See EPA, Oil & Natural Gas Sector: Emission Standards for New Reconstructed, and Modified Sources; Final Rule*, 81 Fed. Reg. 35824, 35942, 35848 (June 3, 2016) (finalizing standards allowing for PE certification of closed vent system design and technical infeasibility to connect a pneumatic pump to existing control device). In the event that EPA continues to believe that design plan review and approval is necessary, we ask the Agency to consider a defined timeframe for such review and a deemed approval in the event that the reviewing agency fails to respond in a timely manner.

C. Non-Producing Areas

Petitioners request that the Agency initiate a rulemaking proceeding to provide compliance flexibility in landfill areas with declining gas flows. Such flexibility is critically important to landfills required to implement the more stringent 34 Mg/year non-methane organic compound ("NMOC") emission threshold. In the Final Rules, EPA failed to address three critical issues: (1) the Final Rules do not allow for the capping, removal, or decommissioning of portions of a GCCS in non-producing areas; (2) the term "closed area" is too narrowly defined, which in turn limits the utility of the 1% NMOC exclusion; and (3) the Final Rules do not allow the use of surface emission monitoring ("SEM") to demonstrate that capping, removal, or decommissioning of a GCCS is appropriate based on-site specific surface methane concentrations.

1. The Final Rules Should Allow for the Capping, Removing, and Decommissioning of GCCS From Non-Producing Areas of Active and Closed Landfills

In the Final Rules, EPA restricts capping, removing, or decommissioning of a GCCS to entire closed landfills and does not allow for capping, removing, or decommissioning¹¹ of portions of a GCCS in closed or non-producing *areas* of otherwise active landfills or closed landfills. *See* 40 C.F.R. § 60.762(b)(2)(v); 40 C.F.R. § 60.33f(f). In other words, EPA does not allow for partial removal or decommissioning of a GCCS at any landfill, closed or open. At proposal, EPA acknowledged and requested comment on how non-producing areas of the landfill (*i.e.*, areas that are no longer generating landfill gas), could be excluded from gas collection and control requirements and whether the criteria for capping or removing a GCCS in Subparts WWW or Cc are appropriate. *See* 79 Fed. Reg. at 41783 & 41792. In the 2015 Supplemental Proposal, EPA proposed criteria for capping and removing a GCCS from the entire closed landfill, or portions of an active landfill.

In the Final Rules, however, EPA only allows for removal of a GCCS from entire closed landfills, *and not non-producing areas*. In the preamble to the Final Rules, EPA states that the Agency intended to provide flexibility to landfills with declining gas production by allowing landfills to demonstrate that a GCCS cannot operate for 15 years and should be removed. *See* 81 Fed. Reg. at 59357-58 & 81 Fed. Reg. at 59302 (“EPA is retaining the requirement to operate the GCCS for 15 years, but is providing flexibility to address declining gas flows in areas where the GCCS has not operated for 15 years.”). Petitioners appreciate the inclusion of this option, but note that EPA has completely failed to achieve its goal of providing flexibility to *areas* with

¹¹ Petitioners note that we have repeatedly requested that EPA define the term “decommission” as used in the Final Rules, but EPA has refused to do so. We again request that the Agency provide a definition for “decommission” that provides a stepdown procedure or options for suspending operation of individual collectors or portions of the GCCS system in areas with declining gas flows.

declining flows by finalizing removal criteria that only allow for GCCS removal or decommissioning in entire closed landfills.

By excluding from the Final Rules an option for decommissioning or removing a portion of a GCCS in non-producing areas, EPA has ignored Petitioners' and others' repeated concerns about declining gas production. *See e.g.*, WM 2014 Comments at 17-19; WM 2015 comments at 12-13; Small Business Advocacy Review Panel, Final Report on EPA's Planned Proposed Rules Standards of Performance for Municipal Solid Waste Landfills and Review of Emissions Guidelines for Municipal Solid Waste Landfills (July 21, 2015) (hereinafter "SBARP Final Report"). EPA has not explained why the Agency has arbitrarily limited GCCS decommissioning or removal to entire closed landfills, other than to note that such change was based on the Agency's consideration of public comments. However, Petitioners have not identified any comments in the rulemaking docket that question EPA's proposed approach to allow for removal or decommissioning of portions of a GCCS in nonproducing areas.

Without such flexibility, landfills with areas of declining gas production will face significant hardships associated with the maintenance of a GCCS in those areas, including an inability to comply with wellhead parameters in the Final Rules, risk of pulling ambient air into the GCCS and damaging the system, and significant use of fossil fuels to maintain flare operation, none of which provide any emission reduction or other environmental benefit. Petitioners request that EPA initiate a notice and comment rulemaking to allow for removal or decommissioning of GCCS in nonproducing areas of landfills, whether closed or active.

2. EPA's Definition of "Closed Area" Is Needlessly Narrow

The Final Rules allow the landfill owner/operator to use actual gas flow measurements to demonstrate that "closed areas" may be excluded from GCCS coverage because they contribute less than 1% of a landfill's total NMOC emissions. However, EPA's definition of "closed area"

in the Final Rules is unnecessarily restrictive as it includes only areas that are physically separated from active portions of a landfill: Under the Final Rules, EPA has defined “closed area” to mean a:

separately lined area of an MSW landfill in which solid waste is no longer being placed. If additional solid waste is placed in that area of the landfill, that landfill area is no longer closed. The area must be separately lined to ensure that the landfill gas does not migrate between open and closed areas.

40 C.F.R. § 60.761; 40 C.F.R. § 60.41f. Therefore, under the Final Rules, separately lined areas may be excluded from control upon a showing of less than 1% of NMOC contribution using actual flow rates. *See* 40 C.F.R. § 60.769(a)(3)(ii)(B).

EPA’s decision to define “closed area” so narrowly fails to provide landfills with declining gas flow much needed flexibility, particularly in light of the stringent 34 Mg/year NMOC emission threshold in the Final Rules, and is based on the mistaken premise that physical separation is needed to prevent gas migration from closed areas. In response to the 2015 Supplemental Proposal, Petitioners urged EPA to expand its definition of “closed area” to include areas with low gas flow, even if such areas are not physically separated from active areas by means of a physical barrier. Petitioners stated that EPA’s concern about gas migration from an unclosed area with a GCCS to a closed area without a GCCS was unfounded because landfill gas travels from areas of high pressure to areas of low pressure. *See e.g.* Republic 2015 EG Comments at 29 (“EPA’s concern that gas could migrate from an unclosed area (with GCCS) to a closed area (without GCCS) is unfounded because landfill gas travels from areas of high pressure to areas of low pressure, not the other way around.”).

In justifying its decision not to expand the definition of “closed area” in the Final Rules, EPA relies on the same unsupported assertion from the 2015 Supplemental Proposal, stating in the Response to Comments Document that:

the EPA has retained the requirement that closed areas of open landfills must be physically separated (e.g., separately lined) . . . because [EPA] continue[s] to believe that landfill gas can migrate between areas of the landfill. As described in the [2014 Proposal], measurements might not accurately reflect actual emissions from the given landfill area because gas could be moving underground and escaping or being collected from an adjacent section of the landfill.

Response to Comments Document at 223. EPA further states that Petitioners failed to provide additional data that gas migration will not occur. *See id.* But additional data is unnecessary to confirm the laws of physics, which unquestionably dictate that gas would instead migrate from the closed area toward the open area with the GCCS, to the extent that it would move at all. EPA has not offered any data to support its unfounded assertion that gas migration will occur.

Petitioners request that EPA undertake a notice and comment rulemaking to correct the definition of “closed area” in the Final Rules to eliminate physical separation as a necessary criterion. A revised definition of “closed area” would allow nonproducing areas to take advantage of actual flow data to demonstrate that such areas contribute less than 1% of the landfill’s NMOC emissions. This same definition of “closed area” should be used by EPA when revising the GCCS removal criteria to allow for removal or decommissioning of portions of a GCCS from nonproducing areas, as discussed above.

3. The Final Rules Should Allow for Surface Emission Monitoring to Support Removal or Decommissioning of a GCCS

In the 2015 Supplemental Proposal, EPA proposed to allow owners/operators to use SEM for purposes of determining when a GCCS can be removed or partially removed. 80 Fed. Reg. at 52150. Nevertheless, under the Final Rules, the Agency has not included SEM as a basis to

demonstrate that site specific conditions warrant removal of GCCS or portions thereof. *See* 40 C.F.R. § 60.33f(1)(f) & 40 C.F.R. § 60.764(1)(f) (excluding SEM from GCCS removal criteria). The unavailability of SEM for GCCS removal significantly increases the burden of the Final Rules' more stringent 34 Mg/NMOC emission threshold and magnifies concerns for landfills with declining gas production. Without the option to use SEM to demonstrate that GCCS removal or decommissioning is appropriate, the 34 Mg/year NMOC emission threshold will further delay the point at which a landfill may remove controls, even when site-specific conditions would warrant removal.

EPA's decision to exclude the option of using SEM from the GCCS removal criteria in the Final Rules significantly and unnecessarily reduces the flexibility available to landfills with areas of declining gas flows and is contrary to the numerous comments submitted to EPA by diverse stakeholders. *See e.g.* WM 2015 Comments; National Association of Clean Air Agencies, Comments on 2015 Supplemental Proposal (Docket ID EPA-HQ-OAR-2003-0215-0197; EPA-HQ-OAR-2014-0451-0187) ("NACAA 2015 Comments").

The SEM criteria for GCCS removal or decommissioning presented in the 2015 Supplemental Proposal addressed key concerns raised by Petitioners for the past twelve years regarding a step-down for GCCS operations due to declining flow.¹² Many areas of landfills with declining flows struggle to maintain sufficient gas flow to operate their control systems, even under the 50 Mg/year threshold established under Subparts WWW and Cf. At the lower 34 Mg/year threshold, landfill owner/operators will need to use increasing amounts of fossil fuel to maintain flare operation, which *increases* emissions of GHG and other pollutants, a result clearly

¹² *See* Docket ID Numbers EPA-HQ-OAR-2014-0451-0037, EPA-HQ-OAR-2003-0215-100, EPA-HQ-OAR-2003-0215-017, EPA-HQ-OAR-2003-0215-0055, EPA-HQ-OAR-2003-0215-0057 and EPA-HQ-OAR-2003-0215-0058, EPA-HQ-OAR-2014-0451-0176; *see also* SWANA, Letter to JoLynn Collins, EPA Waste and Chemical Process Group (Docket ID EPA-HQ-OAR-2003-0215-003).

inconsistent with the purpose of the Final Rules. Therefore, Petitioners urge EPA to allow landfill owners and operators the option to use SEM to demonstrate that GCCS removal is appropriate.

EPA's only explanation for removing such necessary flexibility from the Final Rules is that several commenters objected to the use of SEM for GCCS removal demonstrations. *See* 81 Fed. Reg. at 59357. However, the Agency ignored the majority of comments that supported the use of SEM for GCCS removal demonstrations, including comments submitted by the National Association of Clean Air Agencies ("NACAA"), a national, non-partisan, association of air pollution control agencies in 40 states, the District of Columbia, four U.S. territories and 116 metropolitan areas with air quality professionals. *See generally* NACAA 2015 Comments. In fact, of the over 200 comments in the combined dockets for the Final Rules, less than a handful of commenters explicitly raised concerns with the use of SEM for determining when a GCCS or portions of it could be capped, removed or decommissioned.

EPA has not explained why the Agency relied on comments from so few entities to justify removing the SEM criterion and ignored supporting comments from numerous, diverse stakeholders with substantial experience implementing EPA's CAA Section 111 rules. Accordingly, Petitioners request that EPA initiate a rulemaking to revise the Final Rules to allow for SEM for purposes of demonstrating the appropriateness of GCCS removal and decommissioning, based on site-specific conditions.

D. EPA Should Adopt a Clear Definition of Cover Penetrations

In its 2014 Proposal, EPA sought to "clarify" that "all cover penetrations must be checked during quarterly surface monitoring." 79 Fed. Reg. at 41804. However, that proposal actually represented a significant change to current requirements, as noted by several commenters. *See e.g.* Republic 2015 EG Comments at 5-7; WM 2015 Comments at 25-27.

Whereas Subparts WWW and Cc only require monitoring “where visual observations indicate elevated concentrations of landfill gas, *such as* distressed vegetation and cracks or seeps in the cover,” the Final Rules add to the end of that provision “*and all cover penetrations.*” Compare 40 C.F.R. § 60.753(d) with 40 C.F.R. § 60.763(d). The Final Rules also state that an owner/operator “must monitor *any openings.*” *Id.*

With the addition of the phrase “and all cover penetrations,” EPA has shifted the focus away from “visual observations [of] elevated concentrations of landfill gas” (with cracks and seeps as just examples), to a different focus on cover penetrations, regardless of whether such penetrations exhibit any visible signs of landfill gas. Given that very few cover penetrations do exhibit visual signs of elevated concentrations, the effect of EPA’s change forces landfill owners and operators to monitor “all cover penetrations” instead of only monitoring where visual observations suggest that monitoring is warranted. Thus, EPA has fundamentally altered the surface monitoring requirement. Far more than a mere “clarification” of existing requirements, EPA’s “all cover penetrations” provision is entirely new and potentially burdensome, and commenters opposed it.

But perhaps the most disconcerting aspect of this new requirement is the lack of any clear definition of the “cover penetrations” that all landfills must now monitor. Although EPA’s new provision certainly expands the monitoring requirement far beyond its previous scope, the lack of a definition of “cover penetration” leaves uncertain the full scope of this new requirement. Taken literally, the requirement to monitor “all cover penetrations” could be interpreted to require landfills to monitor every single stake in the ground, including every fence and sign post, of which most landfills have thousands. Furthermore, EPA’s use of the term “any openings” is an ambiguous extra term that adds further confusion to EPA’s intended meaning of “cover

penetrations.” In addition to providing a definition of “cover penetrations,” the Agency must remove the reference to “any openings” in the Final Rules to avoid creating undue confusion.

EPA has recognized that a completely literal interpretation of “cover penetrations” was not intended. Specifically, EPA noted in the preambles to the Final Rules that “[c]over penetrations include wellheads, but do not include items such as survey stakes, fencing or litter fencing, flags, signs, trees, and utility poles.” 81 Fed. Reg. at 59288. EPA also confirmed more broadly in the Response to Comments Document that “cover penetrations” is only intended to include “component[s] of the GCCS system or leachate collection and control system that completely passes through the landfill cover into waste, such as wellheads, leachate risers, and manholes.” Response to Comments Document at 745. This more limited definition of “cover penetrations” is logical—a “cover penetration” should not present a significant emissions concern if it does not reach the waste mass, and most do not, so only those deep enough to reach waste warrant monitoring.

Although EPA’s clarification in the preambles to the Final Rules is helpful and appreciated, Petitioners are concerned that some risk of confusion remains without a codified definition of “cover penetrations.” Therefore, Petitioners respectfully request that EPA convene a rulemaking proceeding to adopt a clear definition of “cover penetrations” into the regulatory text to codify the guidance that EPA has provided in its preambles.

IV. Petition for Reconsideration

Pursuant to Section 307(d)(7)(B) of the CAA, EPA “shall convene a proceeding for reconsideration of [a] rule and provide the same procedural rights as would have been afforded had this information been available at the time the rule was proposed” so long as the party seeking reconsideration can demonstrate: (1) “that it was impracticable to raise such objection” during the public comment period or that “the grounds for such objection arose after the period

for public comment (but within the time specified for judicial review)”; and (2) “such objection is of central relevance to the outcome of the rule.” 42 U.S.C. § 7607(d)(7)(B). An objection “is of central relevance to the outcome of [a] rule” when that objection “provides substantial support for the argument that the regulation should be revised.” *Coalition for Responsible Regulation, Inc. v. EPA*, 684 F.3d 102, 125 (D.C. Cir. 2012). EPA’s Final Rules present several issues that meet these two criteria. As set forth herein, several aspects of the Final Rules were added after proposal, which fundamentally change the considerations addressed by commenters at proposal and significantly increase the compliance burden and overall impact of the Final Rules. Therefore, EPA must convene a reconsideration proceeding on the issues identified in this Section IV.

In addition, EPA’s Final Rules are unlawful because EPA failed to provide adequate notice of many critical aspects of them. The United States Court of Appeals for the District of Columbia (“D.C. Circuit”) has held that lack of notice claims are subject to the CAA reconsideration process, and so Petitioners raise those claims here as well. *See EME Homer City v. EPA*, 795 F.3d 118, 137 (D.C. Cir. 2015). With regard to the notice that EPA is required to provide in promulgating CAA rules, the D.C. Circuit has consistently held that EPA does not satisfy the Act’s notice and comment requirement when the final rule is not the “logical outgrowth” of the proposed rule. *See e.g. Env’tl. Integrity Project v. EPA*, 425 F.3d 992, 996 (D.C. Cir. 2005); *Northeast Maryland Waste Disposal Authority v. EPA*, 358 F.3d 936, 951-52 (D.C. Cir. 2004). A requirement in a final rule is the logical outgrowth of a proposed rule only if “interested parties should have anticipated that the change was possible, and thus reasonably should have filed their comments on the subject during the notice-and-comment period.” *Northeast Maryland Waste Disposal Authority*, 358 F.3d at 952. The “logical outgrowth

doctrine does not extend to a final rule that finds no roots in the agency's proposal because something is not a logical outgrowth of nothing.” *Envtl. Integrity Project*, 425 F.3d at 996. EPA's Final Rules fails to meet the D.C. Circuit's standard for adequate notice, and thus should be reconsidered for that reason, as well as the substantive issues explained in more detail below.

A. Tier 4

The Tier 4 provisions of the Final Rules provide an alternative for determining when a landfill must install a GCCS after it has exceeded the NMOC emission threshold of 34 Mg/year based on modeled emissions. The Tier 4 methodology is based on a demonstration that site-specific surface methane emissions remain below 500 ppm, and thereby justify postponing the requirement to install a GCCS. Although the Tier 4 methodology was generally included in the Proposed Rules, the Final Rules include certain critical elements of Tier 4 that were not subject to notice and comment, are of central relevance to the Final Rules, and must be subject to reconsideration.¹³

At proposal, EPA characterized the Tier 4 methodology as a “flexibility” that could allow a landfill to potentially mitigate the impacts of the new 34 Mg/year NMOC emission threshold if site-specific conditions allowed, while at the same time encouraging early adoption of emission reduction strategies and best management practices such as oxidative cover practices and early gas collection or control to minimize surface emissions. *See e.g.* 80 Fed. Reg. at 52115-16 & 80 Fed. Reg. at 52127-28. EPA further described Tier 4 as the result of EPA's outreach to small entities who were concerned with their ability to comply with the lower NMOC emission threshold. *See* 80 Fed. Reg. at 52128.

¹³ Certain aspects of the Tier 4 issues identified in Section IV.A.3, below, were subject to public comment. Nevertheless, such issues add to the burden associated with EPA's approach to Tier 4 in the Final Rules and significantly reduce the method's intended flexibility. As a result, Petitioners request that EPA address such issues in conjunction with a reconsideration proceeding on the other Tier 4 issues identified in this section.

Many stakeholders including Petitioners, the Small Business Administration, state agencies, and environmental groups submitted comments in favor of Tier 4. Commenters agreed with EPA's analysis that a workable Tier 4 option would incentivize early adoption of methane reduction practices like alternative covers and early installation of collection and control equipment.¹⁴ However, the changes to the Tier 4 methodology that are discussed herein have resulted in a method that is fundamentally different and more burdensome than the proposed Tier 4 that was broadly supported by diverse stakeholders. Such changes permanently alter the availability and utility of Tier 4, thereby removing much of EPA's intended flexibility from the Final Rules and providing no incentives to drive early emission reductions, which undermines the Agency's purpose in developing Tier 4 in the first instance.

At proposal, Tier 4 was available to any landfill with NMOC emission rates above 34 Mg/year. *See* 80 Fed. Reg. at 52148, 52152. In the Final Rules, however, EPA for the first time restricted the use of Tier 4 to landfills with modeled NMOC emission rates between 34 and 50 Mg/year using Tiers 1 or 2. *See* 40 C.F.R. 60.764(a)(6) & 40 C.F.R. 60.35f(a)(6); *see also* 81 Fed. Reg. at 59355 (describing 50 Mg/year cap on Tier 4 methodology as "change" to proposed Tier 4). EPA also introduced in the Final Rules a requirement that when average wind speeds exceed 4 mph and wind gusts exceed 10 mph, landfills must use undemonstrated wind barrier technology when conducting Tier 4 SEM. 40 C.F.R. § 60.764(a)(6)(iii)(A); 40 C.F.R. § 60.35f(a)(6)(iii)(A). In order to determine whether a wind barrier is required during a Tier 4 sampling event, the Final Rules mandate that a landfill must measure wind speeds with an anemometer. *Id.* EPA has also imposed burdensome notification requirements for Tier 4

¹⁴ *See e.g.* Environmental Defense Fund, Comments on 2015 Supplemental Proposal, Docket ID EPA-HQ-OAR-2003-0215-0204 & EPA-HQ-OAR-2014-0451-0181; NACAA 2015 Comments; U.S. Small Business Administration's Office of Advocacy, Comments on 2015 Supplemental Proposal, Docket ID EPA-HQ-OAR-2003-0215-0187 & EPA-HQ-OAR-2014-0451-0155; WM 2015 Comments.

monitoring based on weather-related cancellation events, which require landfill owners and operators to notify EPA or the relevant state administrator no later than 48 hours before a scheduled Tier 4 monitoring event if such event needs to be postponed due to weather conditions. *See* 40 C.F.R. § 60.767(l); 40 C.F.R. § 60.738(m). These aspects of Tier 4 were not subject to public comment and, as set forth herein, have fundamentally changed the nature of the proposed Tier 4, making the method unrecognizable from that which EPA proposed and industrial, environmental, and governmental commenters favored.

1. Tier 4 Should Not Be Limited to Landfills With Modeled NMOC Emission Rates Between 34-50 Mg/year

The proposed Tier 4 would have been available to all “landfills that exceed modeled NMOC emission rates using Tiers 1, 2, or 3” as a way “to demonstrate that site-specific surface methane emissions are low.” 80 Fed. Reg. at 52102. A landfill that could demonstrate that surface emissions are “below 500 parts per million (ppm) for 4 consecutive quarters would not trigger the requirement to install a GCCS even if Tier 1, 2, or 3 calculations indicate that the 34 Mg/yr threshold has been exceeded.” 80 Fed. Reg. at 52102. Under the Final Rules, however, Tier 4 is limited to sites with modeled NMOC emission rates between 34 and 50 Mg/year using Tiers 1 or 2. *See* 40 C.F.R. §§ 60.764(a)(6) and 40 C.F.R. 60.35f(a)(6).

EPA seeks to justify the limitation of Tier 4 to sites with modeled NMOC emission rates between 34 and 50 Mg/year by arguing that the limitation was necessary to “avoid[] a potential conflict between what is required under [the Final Rules] and what is required by [the Landfill NESHAP].” 81 Fed. Reg. at 59355 & 81 Fed. Reg. at 59298-99. EPA’s rationale for restricting Tier 4 to landfills with modeled NMOC emissions between 34 and 50 Mg/year because of a potential conflict with the Landfill NESHAP is not a compelling justification; it is not based on a well-supported technical rationale, and is instead based only on the Agency’s half-hearted

attempt to ensure that its own regulations can be applied in harmony. As set forth in Section III above, EPA failed to address the inconsistency between the Landfill NESHAP and the Final Rules, and in the case of Tier 4, simply altered its applicability criteria in a manner that fails to fully address that inconsistency.

Limiting Tier 4 to sites between 34 and 50 Mg/year will adversely affect a substantial number of landfills subject to the Final Rules. EPA has identified only 105 (12 Subpart XXX sites and 93 Subpart Cf sites) of the total 1142 combined sites that will be subject to either Subpart XXX or Cf that are expected to have NMOC emissions between 34 and 50 Mg/year at up through 2025. This total is less than 10% of all sites affected by the Final Rules. *See* 81 Fed. Reg. at 59362 (Table 2) and 81 Fed. Reg. at 59305 (Table 2). WM, for instance, has identified only seven existing landfills with modeled NMOC emission rates between 34 and 50 Mg/year using Tiers 1 and/or 2, and which would be eligible to use Tier 4. WM has identified an additional seven sites with modeled NMOC emission rates currently below 34 Mg/year using Tiers 1 and/or 2, which WM anticipates will exceed the 34 Mg/year NMOC emission threshold in the next few years. Such landfills may be eligible to use Tier 4 if their modeled NMOC emission rates do not exceed 50 Mg/year. At all other WM landfills, Tier 4 would be unavailable regardless of the site-specific surface methane emissions at those sites. This is an inequitable result and conflicts with the intended purpose of Tier 4 to provide flexibility and encourage the early adoption of emission reduction strategies.

2. New Wind-Related Restrictions On Tier 4 Monitoring Are Unsupported

EPA proposed to limit the use of Tier 4 when the average wind speed exceeds 5 miles per hour and the instantaneous wind speed exceeds 10 miles per hour. *See* 80 Fed. Reg. at 52135-36. The Petitioners, among other commenters, submitted comments urging EPA not to finalize the

proposed wind-speed restrictions, which Petitioners identified as unsupported by the available science and unduly restrictive. *See e.g.* WM 2015 Comments at 15-16. Neither Petitioners nor any other commenters submitted comment on use of a wind barrier as an alternative to the wind-speed restrictions because there was no indication in any of EPA’s proposals that would suggest wind barriers were under consideration. Nevertheless, in the Final Rules, EPA replaced the proposed wind restriction with a requirement to use a wind barrier whenever “average wind speed exceeds 4 miles per hour or 2 meters per second or gust exceeding 10 miles per hour.” 40 C.F.R. §§ 60.764 (a)(6)(iii)(A) & 40 C.F.R. 60.35f(a)(6)(iii)(A). EPA must reconsider use of the wind barrier and related obligations because EPA has failed to support the wind-speed restrictions with required and relevant analysis, has not undertaken to demonstrate that wind-barrier technology is available to be implemented at subject landfills, and has greatly underestimated the increased burden such requirements will impose on sites with low site-specific surface emission rates.

a. Lack of Scientific Basis for Wind-Speed Restrictions

In the Final Rules, EPA fails to provide a justifiable rationale for the need for wind speed restrictions and to explain why the Agency decided to lower the average permissible wind speed for conducting Tier 4 monitoring from 5 mph to 4 mph. In fact, EPA’s only discussion of average permissible wind speed is borrowed from the 2015 Supplemental Proposal, in which EPA notes that the Agency included the wind speed restrictions in the Final Rules “because air movement can affect whether the monitor is accurately reading the methane concentration during surface monitoring.” 81 Fed. Reg. at 59356; 81 Fed. Reg. at 59298. EPA’s conclusory statement regarding the impacts of air movement on SEM is not supported and thus provides insufficient justification for lowering the Tier 4 wind speed restrictions and requiring use of wind barriers. Although EPA states that the Agency has “concerns about whether monitors could

accurately read methane concentrations or provide representative results” in windy conditions, EPA fails to provide quantitative information to confirm that the accuracy and representativeness of SEM results are compromised in windy conditions. *Id.* The closest the Agency comes to providing a technical rationale is found in EPA’s responses to interagency comments in which EPA attempts to justify the wind speed restrictions by referring to best practices guidance for the Agency’s leak detection and repair regulations (“LDAR”) and by providing a graphic from a non-peer-reviewed web blog purporting to show a relationship between measured carbon dioxide and wind speeds. *See* EO 12866 OMB correspondence on NSPS and Emission Guidelines Reviews for MSW Landfills (EPA-HQ-OAR-2003-0215-0238), pages 1513-1514 out of 3499 (hereinafter “Interagency Response to Comments Document”). These inappropriate comparisons do not justify the wind speed restrictions in the Final Rules as they are not related to SEM at landfills and EPA has not attempted to explain how they support such restrictions.

In addition to the Agency’s failure to develop evidence demonstrating the need for wind restrictions on Tier 4 monitoring, EPA’s assumptions about the impacts of wind speed on SEM results is misplaced. The Final Rules require probe placement during a Tier 4 monitoring event at no more than 5 cm (2 inches) above the landfill surface, thereby making it unlikely that wind or turbulence would interfere with the monitoring device. First, there is likely to be vegetation in landfill areas that would implement Tier 4 monitoring.¹⁵ Given the tendency for herbaceous vegetation to act as a wind barrier, increasing friction and reducing turbulence, the monitoring device would be shielded when placed as required at 5 cm (2 inches) above the surface. Second,

¹⁵ *See generally* Daniel P. Duffy, *Layer Upon Layer – Landfill covers come in many types and configurations*, Forester Daily News (Oct. 27, 2013) (available at <http://foresternetwork.com/daily/waste/layer-upon-layer/>); The Interstate Technology & Regulatory Council – Alternative Landfill Technologies Team, *Technical and Regulatory Guidance for Design, Installation, and Monitoring of Alternative Final Landfill Covers* (Dec. 2003) (available at <http://www.itrcweb.org/GuidanceDocuments/ALT-2.pdf>); Assal Edwar Haddad, *Use of Vegetative Mulch As Daily And Intermediate Landfill Cover* (2011) (Doctoral Thesis) (available at <http://stars.library.ucf.edu/cgi/viewcontent.cgi?article=3042&context=etd>).

wind speeds are typically stronger at higher altitudes and weaker closer to the surface because structures, trees, vegetation and other items create barriers that slow down the wind. The fact that wind speeds increase at higher altitudes also calls into question the utility of using an anemometer that is 10 meters above the ground, as it is unlikely that wind speeds at 10 meters above the ground would provide relevant data for surface measurements. Further, the installation of a single anemometer at each landfill (many of which encompass hundreds of acres) is unlikely to be representative of wind speeds across the entire landfill, given differences in topography, and the influence of surrounding forests, fields, and physical structures.

b. Wind-Speed Restrictions Are Unduly Burdensome

In addition to failing to articulate a justifiable basis to impose wind speed restrictions on Tier 4 monitoring, EPA severely underestimates the impacts such restrictions will have on the regulated community. An analysis of wind speed data for 292 cities provides data on average annual wind speed and seasonal (or quarterly) wind speeds across the United States.¹⁶ Los Angeles is the only city in the data set that has an average wind speed under 4 mph for all four quarters of the year. Put another way, 291 cities (or more than 99% of cities in the dataset) have average seasonal wind speeds consistently above 4 mph and would therefore be required to use a wind barrier in order to conduct Tier 4 monitoring. This analysis is consistent with the memorandum by Eastern Research Group (“ERG”) on the California Landfill Methane Rule (“CA LMR”), which concludes that 72% of landfills could not comply with the CA LMR’s 5 mph wind speed restriction for surface monitoring and required a permanent alternative compliance option. *See* ERG, *Analysis of Surface Exceedances from California Landfills under the New Source Performance Standards and the California Landfill Methane Rule*, 4 (July 2015)

¹⁶ WeatherDB, “Find Average Wind Speed across the US, accessed on October 11, 2016, <https://wind-speed.weather.db.com>

(Docket ID EPA-HQ-OAR-2003-0215-0233). Thus, it is clear that EPA's establishment of a wind speed restriction of 4 mph will require the use of a wind barrier by almost any landfill owner/operator who intends to implement Tier 4 to demonstrate that site-specific methane surface emissions are below 500 ppm.

This profound impact is compounded by the fact that EPA has not developed a consistent methodological approach to the use of wind barriers. Although almost every landfill that uses Tier 4 will be required to employ wind barrier technology, EPA has provided no direction on how to implement the wind barrier requirement in a consistent manner across the United States. EPA has indicated that the Agency intends to provide guidance on this topic, but as of yet has failed to take required actions to ensure that this approach can be properly implemented by the regulated community. *See* 81 Fed. Reg. at 59342 and 81 Fed. Reg. at 59291 (“Although we are aware of the use of wind barriers in the field, the EPA intends to provide additional guidance on their use.”). As an example of an aspect of Tier 4 that may prove unworkable in practice, Petitioners note that the requirement to place the sampling probe “no more than 5cm above the landfill surface” as based on “a mechanical device such as with a wheel on a pole” may be infeasible. 40 C.F.R. § 60.764(a)(6)(iii); 40 C.F.R. § 60.35f(a)(6)(iii). Landfills tend to have uneven surfaces covered by vegetation and other obstacles. EPA also states that the wind barrier must surround the surface emission monitor and must be placed “on the ground” to ensure that wind turbulence is blocked. *See* 81 Fed. Reg. at 59373; 81 Fed. Reg. at 59317. Petitioners are not aware of any wind barrier capable of being placed on the ground that would not also prohibit the required probe placement at no more than 5cm above the landfill surface. Petitioners also note that EPA has not demonstrated that the wind barrier is compatible with Section 8.3.1 of Method 21, which the Final Rules require Petitioners to follow to meet the Tier 4 requirements.

See 40 C.F.R. § 60.764(a)(6)(iii); 40 C.F.R. § 60.35f(a)(6)(iii). Furthermore, Petitioners believe that use of a mechanical device on a wheel would result in the wind barrier breaking away from the monitoring setup, or damaging the analyzer probe. These concerns underscore the fact that EPA should have developed a consistent methodological approach to the use of wind barriers and demonstrated the feasibility of Tier 4 before finalizing the Final Rules.

EPA has also not provided a single piece of evidence in the Final Rules or related dockets substantiating that wind barriers will work reliably at a majority of landfills. EPA purports to have included the wind barrier requirement to allow landfills to conduct Tier 4 monitoring in windy conditions. However, the Agency has not demonstrated that the use of such barriers will provide for consistent and reliable SEM results.

EPA's 48-hour cancellation requirement is an added burden, requiring the landfill owner/operator to rely on a weather forecast 48 or more hours in advance of a planned Tier 4 monitoring event to determine if it should be cancelled due to weather conditions. 40 C.F.R. § 60.767(l)(2); 40 C.F.R. § 60.38f(m)(2). The notification requirement that EPA has inserted in the Final Rule ignores the reality that weather forecasts change often and significantly. Instead of making a timely determination whether to proceed with Tier 4 monitoring on a given day, an owner/operator may be forced to make a decision to cancel Tier 4 monitoring events two or more days before the event, simply to avoid making a weather-related cancellation less than 48 hours before the scheduled date due. Landfill owners and operators cannot be expected to predict the weather and must be given the flexibility to assess changing weather conditions prior to monitoring. But the current approach makes it significantly more likely that Tier 4 monitoring events will be delayed frequently due to uncertainty about weather conditions, thereby

complicating the coordination efforts necessary to use Tier 4, increasing the compliance burden and potentially leading to missed quarterly monitoring events.

For all of the foregoing reasons, Petitioners request that EPA reconsider the following aspects of the Final Rules: (1) the limitation on the use of Tier 4 to landfills with modeled NMOC emission rates between 34 and 50 Mg/year; and (2) the Tier 4 wind speed restrictions and associated wind barrier requirement because these changes have altered the fundamental nature of Tier 4 in a manner that Petitioners could not have foreseen.

3. Other Tier 4 Issues

In addition to the issues previously discussed in this section, Petitioners have identified a number of other issues in the Tier 4 provisions of the Final Rules that were subject to public comment, but that EPA has failed to address and that further limit the flexibility the Agency intended to provide to landfills through the inclusion of Tier 4. We request that the Agency consider the following aspects of Tier 4 in conjunction with the reconsideration proceeding requested above.

a. Tier 4 Monitoring Procedures Should Include Corrective Action

The Final Rules do not provide a corrective action period for Tier 4 monitoring exceedances, thereby rendering Tier 4 unworkable and undercutting EPA's stated intention of encouraging the early adoption of alternative control techniques. In their comments, Petitioners urged EPA to include a single, 10-day corrective action period for each exceedance of the 500 ppm methane emission threshold. Petitioners stated that without a single, 10-day corrective action opportunity, Tier 4 would be less effective as a good predictor of the appropriate timing for GCCS installation, and that landfill owner/operators will be less likely to use Tier 4 if a

single exceedance results in the obligation to install a GCCS. *See e.g.* NWRA & SWANA 2015 Comments at 18; WM 2015 Comments at 14-15.

Numerous states and the Small Business Advocacy Review Panel agreed with Petitioners' comments about the need for a corrective action concept to accompany Tier 4. Specifically, the Small Business Advocacy Review Panel concluded in its report on the proposed Final Rules that "Tier 4 should allow for corrective action when surface emissions above 500 [ppm] are identified, consistent with corrective action provisions for quarterly surface monitoring. Without corrective action allowances, the usefulness of Tier 4 is limited." SBARP Final Report at 7-8.

EPA has not stated a justifiable rationale for its decision to exclude from the Final Rules a 10-day corrective action period for Tier 4 exceedances. Instead, EPA explains its action with the unsubstantiated claim that a single exceedance of the "500 ppm threshold . . . would be indicative of higher emissions than would normally be expected at a landfill" and that "landfill conditions warrant installation of a GCCS." 81 Fed. Reg. at 59355. In the Agency's Response to Comments Document, EPA further explains that it is "not allowing for corrective action as part of the Tier 4 demonstration to ensure that landfills employ operational practices that minimize emissions." Response to Comments Document at 564. Such statements are simply incorrect; a single surface emission exceedance that can be corrected is most likely an indication of a localized anomaly in cover or other site-specific factors and *not relevant* to a general conclusion as to overall levels of surface emissions throughout a landfill.

EPA's explanation fails to recognize that the lack of a corrective action concept in Tier 4 will render Tier 4 impracticable to use, and will discourage the adoption of early emission reduction strategies such as oxidative covers and early gas collection and control.

Thus, EPA must revise Tier 4 to allow for a single, 10-day corrective action period prior to requiring a landfill to begin the process of installing a GCCS.

b. The Final Rules Should Be Clarified to Address When Landfills Are Permitted to Use Tier 4

At proposal, a landfill owner/operator would have been permitted to use Tier 4 after a demonstration with Tier 1, Tier 2, *or* Tier 3 that the landfill's NMOC emission rates are above the GCCS installation threshold. *See* 80 Fed. Reg. 52102 & 52112. Under the Final Rules, however, it is unclear what emissions modeling method a landfill owner/operator must use before it may implement Tier 4 monitoring. For example, in the test methods and procedures section of the Final Rules, "Tier 4 is allowed only if the landfill owner or operator can demonstrate that NMOC emissions are greater than or equal to 34 Mg/yr but less than 50 Mg/yr using Tier 1 *or* Tier 2," suggesting that a landfill need not conduct both Tier 1 *and* Tier 2 before moving on to Tier 4, and that Tier 3 measurements are not relevant to Tier 4 implementation. 40 C.F.R. § 60.764(a)(6); 40 C.F.R. § 60.35f(a)(6). Another provision in the Final Rules, however, states that landfill owners and operators may use Tier 4 if Tier 1, Tier 2, *or* Tier 3 show a calculated NMOC emission rate between 34 and 50 Mg/year. *See* 40 C.F.R. § 60.762(b)(2) & 40 C.F.R. § 60.33f(e)(2). Adding further to the confusion, the Final Rules state that the annual Tier 4 surface emission report must include, *inter alia*, "the results of the most recent Tier 1 *and* Tier 2 results in order to verify that the landfill does not exceed 50 Mg/yr of NMOC."¹⁷ 40 C.F.R.

¹⁷ This provision in the Final Rules may suggest that a landfill will conduct yearly Tier 1 and Tier 2 measurements to verify that estimated NMOC emissions continue to remain between 34 and 50 Mg/year, the results of which must be included in the annual Tier 4 surface emission reports. Landfill owners and operators must not be expected to conduct annual Tier 1 and Tier 2 monitoring after a landfill has begun implementing Tier 4. A requirement to conduct annual Tier 1 and Tier 2 testing would be inconsistent with the use of Tier 4, which more accurately accounts for emissions by measuring site-specific surface methane concentrations. Furthermore, EPA has not considered the costs that would be associated with an annual obligation to conduct Tier 1 and Tier 2 tests after moving on to Tier 4. Thus, EPA must clarify that landfills using Tier 4 need not conduct annual Tier 1 and Tier 2 tests. EPA must further clarify that only the initial Tier 4 surface emission report must include the results of any Tier 1 or Tier 2 test.

§ 60.767(c)(4)(iii); 40 C.F.R. § 60.38f(d)(4)(iii). EPA must revise the Final Rules to clarify for landfill owners and operators exactly what methods a landfill must perform prior to implementing Tier 4 monitoring.

c. The Final Rules Should Be Clarified to Address the Timing of GCCS Installation and Operation for Sources Using Tier 4

Under the Final Rules, landfills meeting the rules' design capacity thresholds are required to submit a GCCS design plan within one year of the first NMOC emission rate report in which the modeled NMOC emission rate exceeds 34 Mg/year using Tiers 1, 2, or 3, and to install and operate a GCCS within 30 months of the first NMOC emission rate report in which the modeled NMOC emission rate exceeds 34 Mg/year using Tiers 1, 2, or 3. *See* 40 C.F.R. §§ 60.762(b)(2) & 767(c); 40 C.F.R. §§ 60.33f(b)(1) & (e)(2), 38f(d). However, a landfill using Tier 4 must submit a GCCS design plan within one year of the first measured concentration of methane of 500 parts per million or greater from the surface of the landfill, and must install and operate a GCCS within 30 months of the most recent NMOC emission rate report in which the NMOC emission rate equals or exceeds 34 Mg/year based on Tier 2. 40 C.F.R. § 60.764(a)(6); 40 C.F.R. § 60.35f(a)(6). By linking GCCS installation and operation for sources using Tier 4 to the Tier 2 NMOC emission rate report rather than the triggering surface methane exceedance under Tier 4, EPA has reduced the amount of time a Tier 4 source has to install and operate a GCCS.

Under this framework, sources using Tier 4 will have less than 30 months – in some cases significantly less – to install and operate a GCCS. A landfill using Tier 4 will necessarily measure a surface methane emission exceedance *after* submitting its “most recent” NMOC emission report. For example, a landfill may measure a surface methane exceedance nearly 12 months after submittal of an NMOC report, but before a new NMOC emission report is due.

Under this scenario, that Tier 4 source would only have around 18 months to install and operate a GCCS. Clearly EPA could not have intended this inequitable situation for Tier 4 sources, which further reduces the incentives to use Tier 4 and adopt early emission reduction strategies. Thus, EPA must revise the Final Rules to clarify that Tier 4 sources would be required to install and operate a GCCS 30 months from the date on which a surface methane exceedance of 500 ppm is measured using Tier 4.¹⁸

d. The Final Rules Should Clarify the Process for Submitting Annual Tier 4 Surface Emission Report

The Final Rules state that the initial Tier 4 surface emission report “must be submitted annually, starting within 30 days of completing the fourth quarter of Tier 4 surface emissions monitoring that demonstrates that site-specific surface methane emissions are below 500 [ppm] methane.” 40 C.F.R. § 60.767(c)(4)(iii) & 40 C.F.R. § 60.38f(d)(4)(iii). The Final Rules further state that in the event that Tier 4 monitoring reveals a surface exceedance of 500 ppm methane, a Tier 4 surface emissions report must be submitted “within 1 year of the first measured exceedance.” *Id.* It is not clear if EPA intends this to be a separate surface emission report than the one required to be submitted annually.

Petitioners urge EPA to clarify the surface emission reporting requirements for Tier 4 sources, and recommend that EPA require the initial report to be submitted following the 4th quarter of SEM, with annual submissions thereafter. Petitioners further urge EPA to allow Tier 4 sources a minimum of 60 days to submit the initial report, instead of the 30 days currently

¹⁸ Petitioners submitted comments to EPA urging the Agency to fix inconsistencies in the proposed Final Rules as to the timing of GCCS design plan development and installation for Tier 4 sources. In the Response to Comments Document, EPA claims to have “revised the final NSPS and Emission Guidelines to make the submittal dates clear” for Tier 4 sources. Response to Comments Document at 546. However, EPA’s revisions have created additional confusion and burdens for sources choosing to use Tier 4.

included in the Final Rules. This additional time is necessary to account for the volume of information that must be included in such reports.

In addition, Petitioners believe that EPA has mistakenly included the language in the Final Rules that requires a landfill to submit a Tier 4 surface emission report within one year of a measured exceedance. Once a landfill measures surface methane concentrations above 500 ppm, Tier 4 monitoring is no longer permitted under the Final Rules, and the landfill is required to begin the process for installation and operation of a GCCS. Thus, there is no reason to submit a Tier 4 surface emission report in such a situation. Petitioners request that EPA clarify the submittal requirements for Tier 4 surface emission reports.

e. Tier 4 Recordkeeping Requirements Should Be Reduced

Under the Final Rules, landfills that employ Tier 4 must “keep for at least 5 years up-to-date, readily accessible records of all surface emissions monitoring and information related to monitoring instrument calibrations.” 40 C.F.R. § 60.768(g); 40 C.F.R. § 60.39f(g). Such records must include, *inter alia*, a timestamp of “each surface scan reading . . . detailed to the nearest second, based on when the sample collection begins” and a “log for the length of time each sample was taken using a stopwatch (e.g., the time the probe was held over the area)” and the location “of each surface scan reading” showing “coordinates using an instrument with an accuracy of at least 4 meters.” *Id.*

EPA has failed to articulate a basis to require such records. The obligation to maintain timestamp and location records *for all surface emission readings*, not only methane readings at or above 500 ppm, will be a significant burden. Typically, SEM is performed by a single technician. However, the timestamp and location records will increase the manpower necessary to perform SEM, increasing costs of Tier 4 and further limiting the intended flexibility the method is meant to provide to subject landfills. For example, a single technician will not be able

to operate the surface monitoring device, a stopwatch, and a GPS device at the same time. Additionally, EPA has failed to demonstrate the availability of GPS devices with accuracy of four meters. Petitioners believe that the current practice of placing flags at monitoring locations is more accurate, and would not be improved upon by the use of a GPS device. EPA should streamline the recordkeeping requirements associated with Tier 4.

f. EPA Failed to Consider the Costs Associated With Tier 4

Despite the fundamental changes to Tier 4 that have been highlighted above, EPA has completely failed to consider the costs associated with Tier 4 in the Final Rules. A review of the Interagency Response to Comments Document shows that commenters urged EPA to consider the costs of Tier 4 in the Final Rules. EPA claimed that the Agency lacked necessary data and that “the cost to conduct a Tier 4 analysis is site specific depending on the acreage of each landfill opting to pursue Tier 4 monitoring. Due to all of these uncertainties the EPA has not costed out Tier 4.” Interagency Response to Comments Document at 422 out of 3499. EPA further noted that it decided not to determine the costs of Tier 4 because Tier 4 is voluntary.

EPA’s explanation that the Agency failed to consider costs because Tier 4 is a site-specific, voluntary methodology is unpersuasive. Given the prescriptive nature of the final Tier 4, it is not clear what EPA means when the Agency says that an analysis of Tier 4’s costs would be site specific – all regulations have “site-specific” costs associated with their implementation. Furthermore, despite EPA’s claims that the site-specific nature of Tier 4 makes quantifying costs too difficult, Petitioners have identified a number of factors EPA could and should have considered to determine the costs of Tier 4, including (1) capital costs for all newly required equipment; (2) costs for surveys, perhaps on a “per acre” basis; and (3) additional expenses associated with cancelled monitoring surveys due to wind-related issues, additional surface monitoring technicians, etc. EPA must account for the costs of Tier 4.

B. Liquids Addition Reporting

EPA has conceded that the Agency does not have sufficient data to impose separate standards on landfills that add liquids. *See* 81 Fed. Reg. at 59345 & 81 Fed. Reg. at 59289 (“EPA did not receive sufficient data to support a separate subcategory for landfills adding leachate or other liquids.”). Nevertheless, under the Final Rules, a landfill with a design capacity of 2.5 million megagrams and 2.5 million cubic meters or more that has recirculated leachate or added liquids based on a Resource Conservation and Recovery Act (“RCRA”) Research, Development, and Demonstration (“RD&D”) permit within the last 10 years must prepare and submit an annual report that contains voluminous information about liquids addition practices (“Annual Liquids Addition Report”). 40 C.F.R. § 60.767(k); 40 C.F.R. § 60.38(f)(l). EPA did not introduce the concept of the Annual Liquids Addition Report until the Final Rules, thus providing no notice or opportunity to comment on the new reporting requirement.

Although EPA acknowledged in both the 2014 Proposal and 2015 Supplemental Proposal that the Agency was considering the development of alternative requirements for landfills that add liquids, EPA never proposed that such landfills would be subject to additional reporting obligations under the Final Rules in the absence of substantive compliance obligations. In the 2014 Proposal, EPA solicited comments as to whether the Agency should consider reducing the design capacity threshold and/or initial lag times for landfills located in a wet climate, or that recirculate leachate or add other liquids to the landfill. *See* 79 Fed. Reg. at 41808. EPA’s solicitation of comments failed to provide clear notice of what exactly EPA was considering. In the 2015 Supplemental Proposal, EPA further solicited comment on alternative design thresholds and lag times for landfills located in wet climates or that add liquids. *See* 80 Fed. Reg. at 52137-38. At no point during the notice and comment period, however, did EPA propose an annual reporting obligation exclusively for such landfills.

Given that EPA did not provide an opportunity to comment and has acknowledged that EPA currently cannot justify separate standards for landfills that add liquids, EPA must convene a reconsideration proceeding to allow comment on this issue.

1. Annual Reporting Requirement is Unduly Burdensome

EPA appears to have based the adoption of the liquids addition reporting requirements in part on a mistaken understanding of the relative impact of the Annual Liquids Addition Report. EPA stated in the preambles to the Final Rules that “EPA believes many landfills . . . already keep [liquids addition] records and may submit reports containing quantities of liquids added. So, the effort to track these additional data is expected to be minimal.” 81 Fed. Reg. at 59350; 81 Fed. Reg. at 59295. EPA is mistaken, however, as the Annual Liquids Addition Report will require Petitioners to expend significant effort that far exceeds any benefit of such report. The Annual Liquids Addition Report imposes new and extensive recordkeeping requirements that are materially different and substantially more burdensome than what is required of landfills recirculating leachate or operating bioreactor landfills pursuant to RCRA RD&D permits and Subpart HH of EPA’s Mandatory Greenhouse Gas Reporting Program (40 C.F.R. Part 98).

The Annual Liquids Addition Report imposes new and extensive recordkeeping requirements in the Final Rules that are materially different than those typically required by RD&D permits. EPA estimates that approximately 30 MSW landfills operate with RD&D permits, of which WM operates five. *See* Revision to the Research Development and Demonstration Permits Rule for Municipal Solid Waste Landfills, 81 Fed. Reg. 28720-28724, 28721 (May 10, 2016) (“There are approximately 30 facilities currently operating with RD&D permits.”). Thus, EPA incorrectly assumes that many landfills keep records of liquids addition pursuant to RD&D permits. Additionally, those landfills that do operate under RD&D permits are expected to provide data in a materially different manner than would be required under the

Annual Liquids Addition Report. Based on Petitioner's experience, RD&D permits typically require a moisture balance calculation that accounts for total liquids added to the waste mass including leachate recirculated, precipitation, and leachate collected. States generally require this moisture balance to be reported by landfill phase or bioreactor cell. Because liquids are typically added at the working face of the landfill or active phase, this area tends to be a moving phase over the course of a year, making it difficult to translate into a calculation of surface area and thereby determine waste in place. Thus, the Agency's assumption that many of the data elements in the Annual Liquids Addition Report are tracked as part of a leachate management or RD&D permit is false and significantly underestimates the burdens associated with converting such data to a format that is compatible with the Annual Liquids Addition Report.

In addition, pursuant to the GHG Reporting Program, MSW landfills that exceed applicability thresholds must qualitatively report to EPA if the site recirculated leachate in the past 10-year period. Specifically, 40 C.F.R. § 98.346(a) requires an owner/operator to include in a report "an indication of whether leachate recirculation is used during the reporting year and its typical frequency of use over the past 10 years (e.g., used several times a year for the past 10 years, used at least once a year for the past 10 years, used occasionally but not every year over the past 10 years, not used)." If a subject facility did recirculate leachate in the calendar reporting year, then that site must collect data on the total volume of leachate recirculated and use this volume to determine which k-value to use for the reporting year (if applicable) according to Table HH-1 of 40 C.F.R. 98 Subpart HH.¹⁹ Sites also report the annual waste acceptance

¹⁹ Footnotes a and b to Table HH-1 state the following:

^aRecirculated leachate (in inches/year) is the total volume of leachate recirculated from company records or engineering estimates divided by the area of the portion of the landfill containing waste with appropriate unit conversions. Alternatively, landfills that use leachate recirculation can elect to use the k value of 0.057 rather than calculating the recirculated leachate rate.

rates, along with a characterization of the waste types (e.g., MSW, construction and demolition debris, and inert materials); however, Subpart HH does not require recordkeeping or reporting of volume of leachate recirculated, surface area where leachate has been recirculated over the course of a year, or quantity of waste disposed in areas of leachate recirculation, and such data cannot be readily extracted from Subpart HH reports. Further, reporting on leachate recirculation practices only commenced with the 2010 reporting year.

Given the differences between liquids reporting pursuant to RCRA RD&D Permits and the GHG Reporting Program, EPA incorrectly assumes that landfills already keep the information required by the Annual Liquids Addition Report and as a result greatly underestimates the burdens associated with such report.

2. The Final Rules Should Not Include a Reporting Obligation That is Unrelated to Any Compliance Obligation

As discussed above, EPA has acknowledged that the Agency “did not receive sufficient data to support a separate subcategory for landfills adding leachate or other liquids,” and as a result decided not to adopt separate compliance requirements for landfills that add liquids. *See* 81 Fed. Reg. at 59345; 81 Fed. Reg. at 59289. Instead, EPA states in the Final Rules that “it is appropriate to further assess emissions from wet landfills prior to taking additional action.” *Id.* Thus, EPA intends for the Annual Liquids Addition Reports to “inform potential action on wet landfills in the future.” *Id.* EPA should not include reporting obligations that, by EPA’s own acknowledgement, are unrelated to operative requirements in the Final Rules. Such obligations are arbitrary and capricious given that they bear no relationship to the rules at issue, and are unsupported by EPA’s own data.

^bUse the lesser value when precipitation plus recirculated leachate is less than 20 inches/year. Use the greater value when precipitation plus recirculated leachate is greater than 40 inches/year. Use the average of the range of values when precipitation plus recirculated leachate is 20 to 40 inches/year (inclusive). Alternatively, landfills that use leachate recirculation can elect to use the greater value rather than calculating the recirculated leachate rate.”

EPA's authority to promulgate recordkeeping and reporting requirements is limited by Section 114 of the CAA. Section 114 allows EPA to require reporting for the following purposes: (1) developing regulations under Sections 110, 111, 112, or 129 of the CAA; (2) determining if a regulated entity is in violation of a CAA rule; or (3) carrying out a provision of the Act. *See* 42 U.S.C. § 7414(a). Although EPA has stated that the Annual Liquids Addition Reporting requirements are intended to inform potential future action, the Agency has failed to articulate why additional information is needed, having already determined that the creation of a subcategory for landfills that add liquids is not warranted. During the notice and comment period, EPA requested information about landfills located in wet climates or that add liquids. Based on the information submitted by the numerous commenters, EPA was unable to form a basis to impose separate regulations on such landfills. *See* 81 Fed. Reg. at 59345; 81 Fed. Reg. at 59289. Given that fact, it is unreasonable to require landfills to submit data when EPA has no basis to presume that such data would support separate standards. Furthermore, EPA clearly acknowledges in the Final Rules that the Annual Liquids Addition Reports are unrelated to any compliance obligation in the Final Rules.

Given the absence of any compliance obligation for landfills that add liquids, the inclusion of a free-standing reporting obligation within the Final Rules serves no compliance purpose and therefore is inconsistent with the provisions of Section 111 and cannot be justified under Section 114. EPA has not explained how an on-going reporting obligation for landfills that add liquids is consistent with the regulatory development aspects of Section 114. Furthermore, the Annual Liquids Addition Report is unnecessary given EPA's efforts to

comprehensively address landfills that add liquids in the Agency's forthcoming revisions to RCRA Subtitle D, Part 258.²⁰

On reconsideration, EPA should remove the Annual Liquids Addition Report from the Final Rules.

C. Corrective Action Timeline Procedures

In the 2015 Supplemental Proposal EPA requested comments on the submittal of corrective action timelines. However, EPA's proposal did not include a specific schedule for submitting alternative timeline requests because EPA believed that investigating and determining the appropriate corrective action, as well as the schedule for implementing that corrective action, should be site specific and depend on the reason for exceedance. *See* 80 Fed. Reg. at 52126. In their comments, which addressed this subject, Petitioners agreed with EPA that corrective action schedules should be site specific.

However, the Final Rules contain a highly complex and prescriptive schedule for corrective action. The mandated schedule generally gives owners or operators only 60 days to investigate, determine appropriate corrective action, and implement the corrective action. If an exceedance cannot be corrected within 15 days, then a root cause analysis must be conducted within 60 days of the initial exceedance. Further, an implementation schedule is required for exceedances that will take longer than 60 days to complete the corrective action(s) as soon as practicable, but no more than 120 days. The regulatory provision that EPA adopted in the Final Rules to require this particular schedule for corrective action was not available for comment.

²⁰ In July 2016, EPA announced that the Agency will be requesting "information and data on the performance of wet landfills." EPA, 2016 Regulatory Agenda (available at <http://www.reginfo.gov/public/do/eAgendaViewRule?pubId=201604&RIN=2050-AG86>).

The original landfill rules (40 C.F.R. Subparts WWW and Cc) require the landfill owner/operator to take corrective action for exceedances on a set schedule and request alternative timelines as needed. The Final Rules, however, differ in that the schedule is far more complex and now require a root cause analysis and submission of a corrective action plan—new elements that EPA has never required previously and that were not included in any of EPA’s proposals. *See* 40 C.F.R. § 60.765(a)(3)&(5); 40 C.F.R. § 60.36f (a)(3)&(5).

Rather, EPA’s new complex corrective action requirements and procedure actually appear to be a response to a comment submitted by Republic, asking for an entirely different corrective action procedure, one that eliminates the approval process altogether to avoid the concerns that arise when EPA and states fail to issue their approval in a timely manner. Although Republic supported an approach that would include a root cause analysis and reporting of certain events, Republic did not support any requirement for the submission of corrective action plans for approval. *See* Republic 2015 EG Comments at 13. Thus, the corrective action requirements in the Final Rules are entirely new—the approach was never proposed by EPA or any commenter. Moreover, EPA’s Final Rules do not address the primary focus of Petitioners’ comments on the corrective action process—*i.e.*, Petitioners’ concern that many alternative timeline requests are never approved because of a lack of agency review.

Because EPA provided no notice of its new corrective action requirements and procedure in any proposal, Petitioners could not have commented on it, and EPA’s lack of notice constitutes a violation of its rulemaking requirements under the CAA. In addition, because the corrective action component is the primary compliance obligation imposed on landfills to ensure emissions are minimized through good operation of a gas collection and control system, the requirement is clearly of central relevance to the outcome of the Final Rules. Therefore,

Petitioners respectfully request that EPA reconsider its new corrective action requirements and procedure to allow Petitioners and the general public an opportunity to comment on it.

As part of the reconsideration proceeding, EPA should evaluate whether preparation of a root cause analysis and submission of a corrective action plan is necessary over and above simply reporting temperature or negative pressure events, as already required under the existing provisions of Subparts WWW and Cc. The root cause and corrective action plan creates additional recordkeeping burden that should only be added if EPA can demonstrate that it will achieve meaningful air quality benefits. Background documents in the Interagency Response to Comments Document confirm that the approach proposed by Petitioners, not the approach finalized by EPA, would provide the EPA with sufficient assurances that timely and appropriate measures are taken to avoid hazards, such as landfill fires. Conversely, EPA has not yet demonstrated that its new requirements and procedure are needed to ensure proper operation of GCCS or provide any environmental benefits.

EPA should also reevaluate the costs of its new corrective action procedures, given that the Agency failed to conduct an adequate cost analysis as part of the Final Rules. Specifically, EPA appears to have underestimated the number of root cause analyses that its new provision will require. The EPA claims it does not have enough data to estimate how many landfills would need to conduct the root cause analysis each year, but even a cursory and conservative review of data that EPA references in the Interagency Response to Comments Document suggests one exceedance per year per landfill will likely require corrective action and root cause analysis. EPA should therefore review information from the existing program to provide an expected number of reportable incidents, the number of incidents likely to be resolved within the 15 day time period, the number of incidents likely to require a root cause analysis and corrective action

application, and the usual time (for State and Federal regulatory authorities separately) for approval and/or response to such application. During the reconsideration proceedings, EPA must accurately reflect the costs associated with the new corrective action procedures.

V. Petition for Administrative Stay of the Final Rules Pending Judicial Review

Petitioners respectfully request an immediate stay of the Final Rules. Pursuant to Section 705 of the APA, EPA may postpone the effective date of a regulation pending judicial review where “justice so requires.” 5 U.S.C. § 705. EPA has expressly recognized that the Agency has broad authority under Section 705 of the APA to grant an administrative stay pending judicial review of a final rule that EPA has promulgated pursuant to the CAA.²¹ Petitioners are simultaneously filing petitions for review of the Final Rules in the D.C. Circuit, and justice requires that the Final Rules be immediately stayed given the significant substantive and procedural flaws that have been identified in Sections III and IV of this Petition, which have rendered the Final Rules unworkable and unsupportable as presently constituted.

In considering motions to stay pursuant to APA Section 705, the D.C. Circuit considers the following four factors: (1) the likelihood that the party seeking the stay will prevail on the merits of the appeal; (2) the likelihood that the moving party will be irreparably harmed absent a stay; (3) the prospect that others will be harmed if the court grants the stay; and (4) the public interest in granting the stay. *See Cuomo v. U.S. Nuclear Regulatory Comm’n*, 772 F.2d 972, 974 (D.C. Cir. 1985). EPA must consider the same set of factors when deciding to grant a stay

²¹ See EPA, *Industrial, Commercial, and Institutional Boilers and Process Heaters and Commercial and Industrial Solid Waste Incineration Unit – Final rules; Delay of effective dates*, 76 Fed. Reg. at 28662-28664, 28663 (May 18, 2011) (“EPA notes that it is delaying the effective date of the Major Source Boiler MACT and the CISWI Rule pursuant to the APA, rather than section 307(d)(7)(B) of the Clean Air Act. As explained above, the APA authorizes the EPA to find that justice requires postponing the effective date of a rule when litigation is pending.”); see also *Sierra Club v Jackson*, 833 F. Supp. 2d 11, 24 (D.D.C. 2012) (“While the Clean Air Act establishes the process by which either EPA or a court may stay the effectiveness of a rule pending reconsideration, it does not by its terms or by logical implication limit the authority of either an agency or a court to exercise its traditional statutory authority under Section 705 of the APA to stay such rules or regulations pending judicial review.”).

pursuant to APA Section 705. *Sierra Club*, 833 F. Supp. 2d at 50-51. Petitioners submit that the grounds for an administrative stay of the Final Rules pending judicial review are compelling in this instance and satisfy the statutory requirements for a stay under APA Section 705.

The Final Rules present precisely the circumstances in which an administrative stay pending judicial review is warranted given the significant regulatory uncertainty caused by the substantive and procedural errors in the Final Rules that have been discussed throughout this Petition. EPA's failure to address the overlapping applicability issues, identified in Section III.A, above, is perhaps the best example of how EPA's errors warrant an administrative stay pending judicial review. First, Petitioners are likely to prevail on the merits in challenging the Agency's unreasonable failure to address the overlapping applicability of the old subparts (WWW and Cc), the new subparts (XXX and Cf), and the Landfill NESHAP because the Final Rules are directly contrary to EPA's stated intent and contrary to CAA Section 111 definitions of "new" and "existing" sources by regulating many landfills as both. Second, Petitioners will incur irreparable harm as a direct result of the Agency's failure to resolve the overlapping applicability of the various standards because Petitioners will be forced to simultaneously comply with different and overlapping provisions from either the new or old subparts, forcing Petitioners to engage in two different sets of activities to ensure compliance with the old and new subparts. Thus, Petitioners will be forced to comply with both the old and new subparts without obtaining any benefit from the regulatory provisions that EPA intended to update and streamline with the Final Rules, and the losses that will result will not be recoverable from EPA in any legal proceeding. Third, no party will be harmed by EPA's decision to grant a stay of the Final Rules pending judicial review because Subparts WWW and Cc (and the state plans implementing Subpart Cc) will remain in effect, thereby ensuring that landfills continue to operate their GCCS

and meet the other operational standards of the old subparts, many of which have been carried over into Subparts XXX and Cf. Fourth and finally, granting the stay is within the public interest because, as noted above, EPA's intention to update and streamline the applicable Section 111 standards for MSW landfills has been undercut by the Agency's failure to enact appropriate applicability provisions in the Final Rules.

For all of the forgoing reasons, Petitioners respectfully request that EPA administratively stay the Final Rules rule pending judicial review.

Respectfully submitted,


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APPENDIX A

January 22, 2016

Via Electronic Transmission: ward.hillary@epa.gov

Ms. Hillary Ward

Fuels & Incineration Group, Sector Policies and Programs Division

U.S. Environmental Protection Agency

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**Re: Docket ID No. EPA-HQ-OAR-2003-0215
Docket ID No. EPA-HQ-OAR-2014-0451**

Dear Hillary,

The undersigned organizations representing both private and public landfill owners and operators offer the following supplemental comments to those our organizations have already submitted. After reviewing the comments submitted in response to the U.S. Environmental Protection Agency's (EPA or Agency) Supplemental Proposal for the New Standards of Performance (NSPS) for Municipal Solid Waste (MSW) Landfills and the Proposed Emission Guidelines (EG), we thought it might be helpful to you to clarify and re-emphasize some of the key points made in our earlier comments and reiterated by state officials and other organizations. We understand that the Agency is not required to consider these supplemental comments, as the comment period has closed. Nonetheless, we hope the Agency finds this document useful, and we appreciate your consideration of our supplemental comments as you work towards finalizing the rules.

We Strongly Support EPA's Proposed Removal of the Wellhead Operating Parameters for Temperature and Oxygen/Nitrogen, while maintaining Monthly Monitoring and Recordkeeping

Our organizations are very supportive of the EPA's proposal to eliminate the wellhead parameters for temperature, oxygen/nitrogen and rely on landfill surface emissions monitoring (SEM) requirements in combination with maintenance of negative pressure at wellheads to indicate proper operation of the gas collection and control system (GCCS) and minimize surface emissions.

In our comments, we described our concerns with required wellhead parameters that are counterproductive to optimally operating our gas collection and control systems and reducing emissions. For many years, these wellhead parameters have been among the most significant barriers to earlier installation of gas collection and control measures and in some cases to adequate surface emissions and migration control. We provided numerous examples of state agency determinations as illustrative examples. (See Waste Management Comments on Proposed XXX and ANPRM for EG, September 15, 2014, pg. 24-25, NWRA-SWANA Comments, September 15, 2014, pg. 7-8)

Our nearly two decades of experience implementing Subparts WWW and Cc has demonstrated that the temperature and oxygen/nitrogen parameters are poor indicators of landfill fires or inhibited waste decomposition. To comply with the arbitrary temperature and/or oxygen parameters, sites must often reduce landfill gas (LFG) flow to the affected well, thereby decreasing system performance and increasing potential emissions. Conforming to the wellhead operating parameters imposes significant administrative burdens on both regulatory agencies and the regulated community.

In reviewing the comments received by the Agency, we noted that the National Association of Clean Air Agencies (NACAA), which represents air pollution control agencies in 40 states, DC, four territories and 116 metropolitan areas, also supported eliminating the temperature and oxygen/nitrogen parameters. Additionally, the majority of state agencies and public organizations submitting separate comments including Colorado, Delaware, Georgia, Minnesota, Ohio, four Wisconsin county agencies, and the U.S. Small Business Administration (SBA) all supported eliminating the wellhead parameters for temperature and oxygen/nitrogen.

Several states were silent regarding the EPA's proposal, but strongly supported continued monitoring and recordkeeping of temperature and oxygen/nitrogen data. We also support continued monitoring and recordkeeping for those parameters. Several state commenters raised concerns they would no longer know if a landfill fire occurred; however, the rule requires landfills to report instances when positive pressure occurs in the wells and gas extraction system to avoid a fire. We also believe the Agency could alleviate some state agency concerns by requiring that the monitoring records be kept onsite and available for inspection, and that information suggested by NACAA and the State of Delaware (reporting of oxygen values exceeding 5% and temperature exceedances of 130 degrees F) be included in the facilities' semi-annual reports for informational purposes.

We Support EPA's Proposal with Recommended Amendments to use Tier 4 as an Alternative Approach to Determine when a Landfill must Install and Operate a GCCS, and when a Landfill can Cap or Remove GCCS due to Declining Flow

We strongly support the Agency's proposed use of Tier 4 as an alternative, site-specific emission measurement to determine the appropriate timing for installing and operating a GCCS. We believe that a SEM option will enhance decision-making regarding the timing and approach for controlling landfill gas emissions, and will incentivize sites to implement methane reduction practices as quickly as possible. EPA's proposal to allow use of Tier 4 SEM for landfills looking to cap or remove GCCS due to declining flow is also a welcome approach.

Providing landfill sites with the option to conduct a Tier 4 will more accurately identify changes in gas generation attributable to climate differences, waste age and composition, and other factors and avoids a "one-size-fits-all" with respect to when gas collection is warranted. This will be even more important into the future as we see greater diversion of organics from landfills. In addition, we expect use of a measurement-based approach, as opposed to modeling, will provide a more reliable assessment of emission fluxes, which is particularly important in cases where the results of the available models appear flawed.

All of the undersigned organizations recommended that the Agency's Tier 4 approach be modified to allow for a single, ten-day corrective action period to remedy each exceedance of the 500 part per million (ppm) threshold detected during a Tier 4 monitoring event.

We also urged EPA to delete the specific wind speed criteria and maintain the current Subpart WWW surface monitoring provisions for the performance of Tier 4 (i.e., "typical meteorological conditions").

The comments from states and other public organizations overwhelmingly supported the proposed Tier 4 to determine the appropriate timing for installation and removal of GCCS. The public entities included NAACA, and the States of Delaware, Iowa, Kentucky, New Mexico, Ohio, Oklahoma and

Pennsylvania, the Palm Beach Solid Waste Authority, four counties in Wisconsin, the Texas SWANA chapter and the SBA. The Environmental Defense Fund also commented in support of Tier 4, although they recommended a lower threshold than EPA proposed. The public organizations all supported the EPA proposed threshold of 500 ppm, and elimination of the wind speed limit on use of Tier 4. NACAA and the state and local government commenters discussed the potential implementation barrier the wind speed requirement would pose for using Tier 4. The vast majority of the public organizations, including NACAA also commented in favor of EPA including a brief, one-time corrective action period (e.g., ten-day) to remedy exceedances that can be addressed with simple corrections to landfill cover, or adjustments of the existing GCCS.

We Strongly Support EPA's Proposed Subcategory for Closed Landfills

The undersigned organizations continue to support the proposed subcategory for closed landfills and the proposed expansion of the subcategory to include landfills that close (cease accepting waste) within 13 months after publication of the final EG rules in the Federal Register. It is critical that landfill owners that are planning to cease accepting waste have the necessary time to meet all of the criteria and submit the necessary documentation for a "closed landfill" designation. Closed landfills that are required to control emissions under the existing EG or NSPS WWW would continue to operate the facilities, including GCCS, and reduce emissions in accordance with these rules.

In our review of the comments, none of the 15 state and local regulatory agencies that submitted formal comments, opposed the proposed closed landfill subcategory, nor did NACAA in its formal comments. The Pennsylvania Department of Environmental Protection (PA DEP) and the SBA affirmatively supported the closed landfill subcategory. PA DEP recommended that EPA expand the closed landfill subcategory to allow MSW owners to close within 13 months of final rule publication. The Small Business Administration stated that EPA should allow more landfills to close up until the state or Federal regulations implementing the revised EG are effective, particularly as EPA provided no practical notice to entities when they proposed the closed landfill subcategory that the cut-off date would be 7/17/2014.

Based on gas generation model results for closed landfills that report emissions to federal GHG reporting program, we estimate the proposed change to reduce non-methane organic compound (NMOC) threshold from 50 Mg to 40 Mg will prolong the requirement to operate GCCS another five years, and impose significant costs on landfills at the end of life. Reducing the threshold to 34 Mg/year will prolong operations by eight years.

Many closed landfills struggle to maintain sufficient gas flow to operate their control systems under the 50 Mg/year threshold. At a lower NMOC threshold, landfill owner/operators will need to use increasing amounts of fossil fuel to maintain flare operation. This increases GHG emissions, which conflicts with the Administration's Methane Reduction Plan.

Closed landfills do not generate revenue and many are owned by municipalities, which must pass new costs on to their local taxpayers. Closed site compliance costs are formulated based on settled expectations that new requirements (i.e., lower NMOC threshold) will not be triggered in the absence of a reopening or an expansion. Absent the proposed subcategory, including the 13-month timeframe expansion, closed landfill facilities will face significantly increased compliance costs and administrative burdens.

We Support Streamlining the Design Plan Approval and Update Process

Our organizations supported EPA's conclusion that review and approval of design plans is clearly a burden for many states. Two of our organizations, Waste Management and Republic Services, estimated that only 40 percent of their landfills operate pursuant to an approved design plan, and together the two companies own and operate about 50 percent of the MSW landfills in the U.S. Given this track record, we strongly support the Agency finalizing a process that eliminates the need for state approval of plans, which is a system that has simply not worked. Instead, state and local agencies and landfill owner/operators should be allowed to obtain and rely upon third-party professional engineer (PE) certification of design plans and revisions in lieu of an agency approval process. Certified plans may be maintained onsite for inspection and/or submitted to the implementing agency.

Subpart WWW in discussing design plan approval in Section 60.752 states, *"Because of the many site-specific factors involved with landfill gas system design, alternative systems may be necessary. A wide variety of system designs are possible, such as vertical wells, combination horizontal and vertical collection systems, or horizontal trenches only, leachate collection components, and passive systems."* No other NSPS rule includes such a statement about site-specific design variables, and this statement supports need for the PE review and certification rather than relying on agency staff unfamiliar with the highly site-specific nature of GCCS design.

A process that relies on independent PE certification would reduce administrative burdens on state agencies, while offering greater regulatory certainty for the regulated community and public. Further, use of state-licensed PEs would simplify the process. Landfill owner/operators have ready access to third-party PEs, who have the requisite experience and expertise in GCCS design, and state certification boards exist to oversee and license PEs.

The vast majority of the state organizations that commented on EPA's proposal for third-party verification of plans, including NACAA, opposed the proposal as we did. Most described third-party verification as expensive, burdensome and unnecessary. While a number of states were loath to give up their design plan approval authority saying it does not pose a burden, the nationwide record of implementing approvals does not support their argument.

Furthermore, EPA and the delegated state agencies' primary oversight of the GCCS system is not at the design plan stage, but rather through the permitting process when a landfill has triggered the need to install a GCCS. Landfills must apply to the regulators for a construction permit, and the state agency must permit control devices associated with the GCCS. This permitting authority gives states the best opportunity for oversight and approval. It is through permitting, as well as required wellhead pressure monitoring, surface emission monitoring, remediation of exceedances and required documentation of GCCS "as-built" conditions (all contained within required semi-annual reports), not review and approval of a conceptual design, which provides regulators ample oversight mechanisms to ensure GCCS is properly installed and operated.

There is significant precedent for submission of site-specific regulatory plans with no requirement for Agency approval. In fact, the proposal to require Agency approval of the both the design plan and treatment system monitoring plan is inconsistent with numerous federal rules that instead require copies (of management, monitoring or operating plans) to be submitted to the agency (no approval required) and/or maintained on site for agency inspection:

- 40 C.F.R. 98 Subpart A– GHG Mandatory Reporting Rule (GHG monitoring plan)
- 40 C.F.R. 60 Subpart Ec – HMIWI (waste management plan)
- 40 C.F.R. 60 Subpart F – Portland Cement Plants (monitoring plan)
- 40 C.F.R. 60 Subpart Ja – Petroleum Refineries (flare management plan)
- 40 C.F.R. 60 Subpart Ka – Storage Vessels (operations and maintenance plan)
- 40 C.F.R. 60 Subpart Y – Coal Preparation and Processing Plants (fugitive dust emissions control plan)
- 40 C.F.R. 60 Subpart GG – Stationary Gas Turbines (parameter monitoring plan)
- 40 C.F.R. 60 Subparts VV, VVa – Equipment Leaks SOCOMI (monitoring and inspection plans for pumps, valves, closed vent systems)
- 40 C.F.R. 60 Subpart AAA – Residential Wood Heaters (Manufacturer’s Quality Assurance Plan: note this plan is third-party certified)
- 40 C.F.R. 60 Subpart QQQ – Petroleum Refinery Wastewater Systems (plans/specification for various component or system design)
- 40 C.F.R. 60 Subpart AAAA – Small MWC Units (materials separation plan)
- 40 C.F.R. 60 Subpart CCCC – CISWI (waste management plan)
- 40 C.F.R. 60 Subpart DDDD – CISWI EG model rule (control plan, waste management plan)
- 40 C.F.R. 60 Subpart EEEE – OSWI (waste management plan)
- 40 C.F.R. 60 Subpart FFFF – OSWI EG Model rule (waste management plan)
- 40 C.F.R. 60 Subpart IIII – Stationary Compression Ignition Internal Combustion Engines (maintenance plan)
- 40 C.F.R. 60 Subpart JJJJ– Stationary Spark Ignition Internal Combustion Engines (maintenance plan)
- 40 C.F.R. 60 Subpart KKKK – Stationary Combustion Turbines (quality assurance plan, parametric monitoring plan)
- 40 C.F.R. 60 Subpart LLLL – Sewage Sludge Incineration Units (fugitive emissions monitoring plan)
- 40 C.F.R. 60 Subpart MMMM – SSIU EG Model Rule (control plan)
- 40 C.F.R. 60 Subpart OOOO – Crude Oil and Natural Gas Production, Transmission and Distribution (inspection and maintenance plan)
- 40 C.F.R. 60 Subpart QQQQ - Residential Hydronic Heaters and Forced-Air Furnaces (Manufacturer’s quality assurance plan: note this plan is third-party certified)
- 40 C.F.R. 60 Subpart TTTT – GHGs for EGUs (monitoring plan)
- 40 C.F.R. 63 Subpart A – General NESHAPs Provisions (SSM plan)
- 40 C.F.R. 63 Subpart EEE – Haz Waste Combustors (emergency safety vent operating plan, Operations and Maintenance Plan, Feedstream analysis plan)
- 40 C.F.R. 63 Subpart HHH – Natural Gas Transmission and Storage (inspection and maintenance plan for control devices, site-specific monitoring design, data collection, and QA plan for monitoring control device)
- 40 C.F.R. 63 Subpart LLL: Portland Cement (site specific monitoring plan)
- 40 C.F.R. 63 Subpart OOO: Manufacture of Amino/Phenolic Resins (monitoring plan for leak detection, gas stream flow determination plan)
- 40 C.F.R. 63 Subpart QQQ: Primary Copper Smelting (Operations and maintenance plan for each capture and control device)
- 40 C.F.R. 63 Subpart RRR: Secondary Aluminum Production (operations, maintenance and monitoring (OM&M) Plan for capture/control systems)

- 40 C.F.R. 63 Subpart TTT: Primary Lead Smelting (corrective action plan)
- 40 C.F.R. 63 Subpart VVV: POTWs (inspection and monitoring plan to comply with the standard)
- 40 C.F.R. 63 Subpart XXX: Ferroalloys Production (process fugitive ventilation design plan, outdoor fugitive dust plan, site-specific monitoring plan for CMS)
- 40 C.F.R. 63 Subpart GGGG: Solvent Extraction for Vegetable Oil Production (plan for demonstrating compliance)
- 40 C.F.R. 63 Subpart HHHH: Wet-formed Fiberglass Mat Production (OM&M Plan, performance evaluation plan)
- 40 C.F.R. 63 Subpart IIII: Surface Coating of Automobile and Light Duty Trucks (work practice plan to minimize HAP emissions)
- 40 C.F.R. 63 JJJJ: Paper and Other Web Coating (site-specific monitoring plan for capture system and control device; inspection and maintenance plan for catalytic oxidizer)
- 40 C.F.R. 63 Subpart KKKK: Surface Coating of Metal Cans (Work practice plan; inspection and maintenance plan for catalytic oxidizer)
- 40 C.F.R. 63 Subpart MMMM: Surface Coating of Miscellaneous Metal Parts and Products (work practice plan, site-specific inspection and maintenance plan for catalytic oxidizer)
- 40 C.F.R. 63 Subpart NNNN: Surface Coating of Large Appliances (work practice plan, site-specific inspection and maintenance plan for catalytic oxidizer)
- 40 C.F.R. 63 Subpart OOOO: Printing, Coating, and Dyeing of Fabrics and Other Textiles (work practice plan, sampling plan, and site-specific inspection and maintenance plan for catalytic oxidize, capture system monitoring plan)
- 40 C.F.R. 63 Subpart PPPP: Surface Coating of Plastic Parts and Products (work practice plan, site-specific inspection and maintenance plan for catalytic oxidizer)
- 40 C.F.R. 63 Subpart QQQQ: Surface Coating Wood Building Products (work practice plan, site-specific inspection and maintenance plan for catalytic oxidizer)
- 40 C.F.R. 63 Subpart RRRR: Surface Coating of Metal Furniture (work practice plan, site-specific inspection and maintenance plan for catalytic oxidizer)
- 40 C.F.R. 63 Subpart SSSS: Surface Coating of Metal Coil (capture system monitoring plan, site-specific inspection and maintenance plan for catalytic oxidizer)
- 40 C.F.R. 63 Subpart TTTT: Leather finishing (Compliance demonstration plan)
- 40 C.F.R. 63 Subpart UUUU: Cellulose Products (site specific monitoring plan for CMS)
- 40 C.F.R. 63 Subpart VVVV: Boat Manufacturing (implementation plan for open molding operations)
- 40 C.F.R. 63 Subpart ZZZZ: Stationary RICE (site-specific monitoring plan for CPMS, maintenance plan)
- 40 C.F.R. 63 Subpart FFFFF: Integrated Iron and Steel (Operations and maintenance plan, 63.7834)
- 40 C.F.R. 63 Subpart JJJJ : Brick and Structural Clay Products Manufacturing (Operation, Maintenance and Monitoring Plan)
- 40 C.F.R. 63 Subpart KKKKK: Clay Ceramics Manufacturing (Operation, Maintenance and Monitoring (OM&M) Plan)
- 40 C.F.R. 63 Subpart LLLLL: Asphalt Processing and Roofing Manufacturing (site-specific monitoring plan)
- 40 C.F.R. Subpart PPPPP: Engine Test Cells (inspection and maintenance plan)
- 40 C.F.R. 63 Subpart SSSSS: Refractory Products Manufacturing (OM&M Plan)
- 40 C.F.R. 63 Subpart TTTTT: Primary Magnesium Refining (operations and maintenance plan)

- 40 C.F.R. 63 Subpart UUUUU: Coal and Oil-fired EGUs (site specific monitoring plan 63.10000(d))
- 40 C.F.R. 63 Subpart BBBB: Gasoline Distribution bulk terminals, plants, and pipeline facilities (monitoring and inspection plan)
- 40 C.F.R. 63 Subpart QQQQQ: Wood preserving area sources (management practice plan)
- 40 C.F.R. 63 Subpart VVVVV: Chemical Manufacturing area sources (monitoring plan, includes O&M for control device)
- 40 C.F.R. 63 YYYYY: Ferroalloys Production facilities for area sources (site-specific monitoring plan)
- 40 C.F.R. 63 AAAAAA: Asphalt Processing and roofing manufacturing area sources (site specific monitoring plan)

Despite the numerous regulatory precedents noted above, should EPA decide to maintain the requirement that state agencies approve design plans and revisions, we strongly recommend that the Agency incorporate language that provides for automatic approval of plans should a state agency fail to approve or disapprove a plan or revision in writing within 90 days. A precedential example can be found at 40 C.F.R. 63 Subpart MMM Pesticide Active Ingredient Production, which provides the Agency 90 days to approve or disapprove a “precompliance plan” before it is deemed approved.

We Strongly Support the EPA’s Proposed Definition of Landfill Gas Treatment Systems, but Oppose Proposed Agency Approval of Treatment Plans

We support the Agency’s proposed definition of landfill gas, treatment system and believe it supports and promotes projects for beneficial use of landfill gas. However, we oppose the proposal to require agency approval of the treatment system, monitoring plan as part of the GCCS Design Plan. The requirement would create a new and unwarranted burden for the agencies, especially since the treatment systems are site-specific, tailored to the end user specifications, and highly technical.

The Agency proposal is inconsistent with the federal rules listed above, which merely require copies (of management, monitoring or operating plans) be submitted to the agency or maintained on site for agency inspection.

The landfill gas, treatment systems are not subject to emission limits or continuous emissions monitoring, yet EPA proposes to require agency approval, which is more stringent than what EPA has required for sources with actual HAP emission limits and continuous emissions monitoring requirements. We recommend EPA finalize a requirement to prepare a treatment system, monitoring plan and maintain a copy on site for agency inspection as has been promulgated in so many other NSPS and NESHAP rules.

Peer Reviewed Data Show Landfill Gas Collection Efficiencies Ranging from 75 Percent to Over 95 Percent are Defensible

In response to the draft NSPS for landfills, the EPA received comments regarding the collection efficiency of GCCSs. Collection efficiency is an important factor used in calculating the emissions of NMOCs, volatile organic compounds (VOCs), and greenhouse gases (GHG) from landfills. Docketed comments on the proposed NSPS/EG rules (see EPA-HQ-OAR-2014- 0451 and EPA-HQ-OAR-2003-0215) mention collection efficiency at landfills is lower than recent data suggest. Specifically collection efficiencies could be as low as 20 percent (Sierra Club), or 35 percent (ERC, Covanta).

We have reviewed these comments and determined that they do not provide a representative picture of the collection efficiency seen at most landfills operating with current industry state-of-the-practice systems and procedures, specifically those used for compliance with the NSPS/EG.

Inadequacy of Cited Studies

The studies cited by the Sierra Club, ERC, and Covanta do not support claims that typical methane capture is as low as 20 or 35 percent. The studies are not representative of collection systems operated in compliance with the current and proposed MSW Landfill NSPS or EG rules.

Sierra Club Sources

The Sierra Club letter suggests that lifetime LFG collection rates are as low as 20 percent. They reference the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (FAR), which states, “Some sites may have less efficient or only partial gas extraction systems and there are fugitive emissions from landfilled waste prior to and after the implementation of active gas extraction; thus estimates of ‘lifetime’ recovery efficiencies may be as low as 20%.” However, it is clear in the FAR that the 20 percent lifetime recovery rate is not referring to a NSPS compliant system. The FAR estimates collection efficiencies across a broad range of landfills worldwide from highly developed countries with stringent landfill standards (e.g., the U.S.) and far less developed countries with no sanitary landfills or landfill regulatory standards.

The Sierra Club also cites comments from Hans Oonk in the “Expert Review of First Order Draft of Waste Chapter to IPCC Fourth Assessment Report”; however, his comments confirm that the low end of the gas capture range is not comparable to the collection efficiency achieved at landfills regulated under the current NSPS. He evaluated performance of gas collection systems that were installed at Dutch landfills, not for regulatory purposes, but only to recover gas for energy. Hans Oonk concluded that LFG collection for energy recovery coupled with the requirement to flare additional LFG is a highly effective option for controlling LFG emissions. This hybrid energy and flare system is the industry standard throughout the United States.

Furthermore, lifetime emissions of 80 percent of the gas from a landfill as posited by Covanta, ERC and Sierra Club would almost certainly make compliance with the NSPS/EG impossible. Such high emission rates would result in methane detections during required surface monitoring, and in turn requiring corrective action and expansion of the GCCS to lower surface emissions. Even absent the regulatory requirements for monitoring, the emissions would likely result in significant odors and complaints to local agencies.

The Sierra Club letter claims, “no gas collection can be functional until later when the cell is full and low permeable [sic] final cover is installed.” In fact, hundreds of landfills have placed waste in areas with existing gas collection. While this practice may require gas systems to undergo repair, the Sierra Club’s claims that “gas collection is also not functional prior to the installation of the final cover,” is simply wrong, and lacks a fundamental understanding of how GCCSs are design, installed, operated, and expanded as landfills grow.

The 20 percent recovery value cited in these comments is not representative of U.S. landfills. It may be representative of the average of unregulated landfills worldwide as part of the low end of the range of collection efficiencies, but federal and state landfill requirements results in significantly higher collection efficiency rates at U.S. landfills.

Covanta and ERC Sources

The Covanta and ERC letter cites five sources for the range of collection efficiencies, including:

1. Environmental Commissioner of Ontario, EcoIssues: GHG11 Landfill Methane, http://ecoissues.ca/GHG11_Landfill_Methane
2. Fishedick M. et al. (2014) Climate Change 2014: Mitigation of Climate Change, Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
3. Levis, J., M.A. Barlaz (2014) Landfill Gas Monte Carlo Model Documentation and Results,
4. CalRecycle 2012, Review of Waste-to-Energy and Avoided Landfill Methane Emissions.
5. Documentation for Greenhouse Gas Emission and Energy Factors Used in the Waste Reduction Model (WARM)

We have reviewed each of the cited sources for its appropriateness and representativeness for determining the collection efficiency of landfills in the United States subject to the NSPS/EG.

The first of these citations is a website for the Environmental Commissioner of Ontario (ECO). The ECO cites some studies of LFG collection efficiency and concludes that the default collection efficiency of 75 percent used by the EPA and others is overstated (note: landfills in Canada are not subject to the more stringent requirements of the NSPS/EG). However, the ECO also notes that the IPCC states that LFG collection could be above 90 percent. We note that the comments by Sierra Club, ERC and Covanta omitted the upper end of the range of landfill collection efficiencies cited by the same sources they reference.

The second source (Fishedick M. et al.) states that methane collection efficiencies range from 50 percent to 95 percent. The low collection efficiency rate of 50 percent is appropriate for some landfill collection systems that are not designed for compliance with the NSPS/EG, but are operated to achieve odor control or mitigate LFG migration. However, this type of system is typically found at small or closed landfills that account for a relatively small amount of GHG emissions, and where a comprehensive GCCS would be cost prohibitive.

The third citation (Levis and Barlaz) uses models to analyze methane recovery from different waste types under varied landfilling conditions. While the study indicated that over 80 percent of methane could be emitted, this low methane recovery rate applied to only one waste type (grass clippings), which is a rapidly degrading waste disposed in a bioreactor landfill. Further, the 80 percent emission rate is a worst-case, lifecycle scenario, in a modeled situation with delayed collection. Overall, the methane recovery rate for landfills in the model scenarios for landfills receiving more than 110 centimeters of precipitation per year were greater than 60 percent, and greater than 70 percent for landfills receiving less than 110 centimeters of precipitation per year.

The fourth citation (CalRecycle) is a study of a single landfill in California, which was subject to neither the federal NSPS/EG nor the California AB 32 Landfill Methane Rule (LMR). It is therefore inappropriate to apply conclusions from this single site study to sites complying with NSPS and the LMR. In fact, quite the opposite, this study provides support for why the NSPS/EG rule can be effective at reducing LFG emissions as compared to unregulated conditions.

The fifth citation (WARM guidance) draws on some of the same work as the Levis and Barlaz study discussed above. The WARM guidance determined that better than 50 percent LFG recovery was

typical for the national average for most waste types with yard trimmings being the exception. This value in the WARM guidance does not support assertions of a LFG recovery rate as low as 35 percent being representative. The “typical” and “aggressive gas collection” scenarios yield far greater collection efficiencies.

The Covanta and ERC letters also cite *Comparison of First-Order-Decay Modeled and Actual Field Measured Municipal Solid Waste Landfill Methane Data* (Amini, Reinhard, and Niskanen, 2013, Waste Management Vol. 33). This study found that the first-order-decay (FOD) model used to model landfill emissions can underestimate methane generation. However, FOD modeling for GHG emission calculations is frequently inaccurate, providing methane generation estimates that are both too high and too low, depending on the landfill. Furthermore, the landfills evaluated in the study are Danish, and results may not be representative of either the typical waste stream in the U.S. or landfill operations subject to U.S. regulatory requirements.

Available Collection Efficiency Data

The document entitled *Current MSW Industry Position and State-of-the-Practice on LFG Collection Efficiency, Methane Oxidation, and Carbon Sequestration in Landfills* (SWICS, 2009) was developed for EPA and reviewed seven studies of LFG collection efficiency. The analysis distinguished between study data from landfills with collection systems and cover practices compliant with the NSPS/EG rules, and data from landfills not meeting those regulatory standards. Not surprisingly, collection efficiencies were generally lower in non-compliant landfills than collection efficiencies at NSPS-compliant landfills. The SWICS study concluded that the most important factors affecting collection efficiency were cover type and extent of GCCS installation. These conclusions and an approach for estimating collection efficiency based on selected cover types and scope of GCCS installation was adopted with only minor modifications by the EPA for landfills reporting under the federal Mandatory Reporting Rule for GHG (GHGRP) (40 C.F.R. Part 98, Subpart HH).

A more recent study, *The Estimated 100-Year Collection Efficiency for U.S. Landfills* (Stege, A, Proceedings of 2013 SWANA Landfill Gas Conference), reviewed typical landfill operating practices throughout the U.S. The study compiled data from the EPA’s Landfill Methane Outreach Program (LMOP) and grouped landfills by owner/operator -- large private, small private, public, and location -- with those operating in the California South Coast Air Quality Management District (SCAQMD) and Bay Area Air Quality Management District (BAAQMD) separated due to their more stringent regulatory requirements. The study found that the 100-year LFG collection efficiency for typical landfills across the country was in excess of 80 percent.

In addition to the SWICS and Stege studies, the most recent direct measurement studies indicate that collection and control efficiencies are higher than the assumptions used in FOD models (De La Cruz et al., 2015 draft in final EPA review) (Walker et al., 2014) (Shan et al., 2013) (Green et al., 2012) (Goldsmith et al., 2012) (Chanton et al., 2011) (Green et al., 2009)). Direct measurement studies have also shown that inventory models used by regulators significantly over-estimate landfill methane emissions, as summarized below:

- (Shan et al., 2013) determined collection efficiencies of 91% to >99% based on statistically representative flux chamber measurements at four large California Landfills.

- (Walker et al., 2014) applied direct measurement of methane emissions and oxidation from (Goldsmith et al., 2012) for five California Landfills, four with Mediterranean climates and one with an arid desert climate. Control efficiency for the five landfills ranged from 83-88%. The effects of coverage of the landfill gas collection system and relative size of the working face and daily cover areas was analyzed and negligible.
- (De La Cruz et al., 2015) compared direct measurement of methane emissions from a humid landfill located in Southeastern U.S. with waste aged less than three years to modeled emissions and determined the FOD models predicted 4-17 times high emission rates than measured.
- Mønster et. al. (2015) showed that for 15 Danish landfills, model-predicted emissions were on an average, a factor of 5 greater than the measured emissions.
- (Green et al., 2012) compared direct measurement of four closed landfills without gas collection and found that the measured emissions were only 33%, 12%, 44%, and 17% of the emission rate predicted by the GHGRP (EPA MRR in table below). The corresponding over-prediction of models was by factors of 2.3 to 8.3 greater than the measured emissions. The SWICS methodology (SCS, 2009) which applies a 30% oxidation rate for soil mixtures likewise predicted much lower emission rates than the GHGRP:

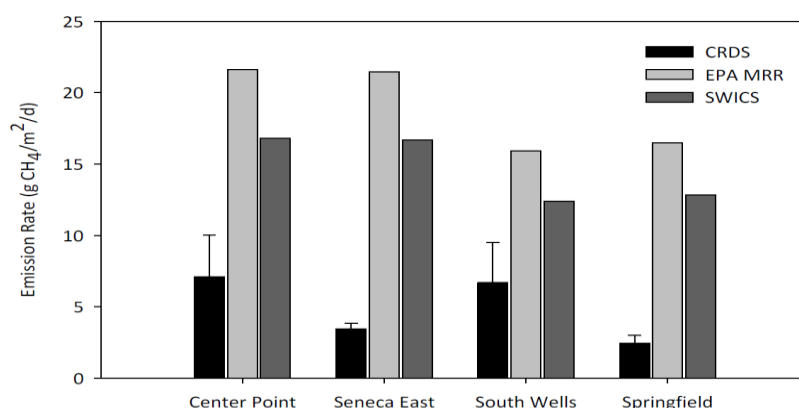


Figure 1. Comparison of Methane Emission Results from CRDS Measurements and Models (error bars represent 1sd)

- Two southern California Landfills were evaluated by research aircraft taking methane measurements in (Peischl, J. et al., 2013). Peischl et al. applied the measured emission rate to each site's footprint and methane collection and combustion data to estimate collection efficiencies of 73% and 77%. Applying an oxidation factor of 38 percent results in control efficiencies of 77% and 80%. These results are considered a lower bound by the researchers because of limitations in accounting for other sources of methane and potential atmospheric effects. Note that (Shan et al., 2013) estimated collection efficiencies at one of these landfills by two different methods of 93.1% and 95.9%.
- A study of three landfills (humid climate located in Southeastern U.S.) measured collection efficiency (ignoring oxidation) based on EPA Method OTM-10 of 73% (70/77), 80.5% (77/89), and 38% (Arcadis, 2012). Waste Management (Kelly et al., 2012) raised the following significant issues with the results from Landfill B (site with 38%):

- Bias toward high methane based on location with respect to an adjacent source (hog farm) and location downwind of LFG wells;
- The landfill installed a new gas collection system shortly after the measurements, so GCCS in place at time of study was not representative of modern landfills with systems operating in accordance with NSPS/EG; and
- There was only one measurement season (summer) as contrasted with the other two landfills, which were separately measured over two seasons.

The results of direct measurement studies refute docketed comments (EPA-HQ-OAR-2014- 0451 and EPA-HQ-OAR-2003-0215) that LFG collection efficiencies are much lower (about 35%-70% over the life of the landfill) than default values in inventory models used by regulatory agencies. Further, they refute comments that claim models of landfill gas emissions often result in significant under-estimation of emissions. There is neither a technical basis, nor direct measurement studies to underpin the claims that typical collection efficiencies are only 35-70%. Furthermore, methane oxidation was not incorporated into the study underpinning these comments, and should be for a more accurate assessment of landfill emissions.

Consistency with Recent EPA Regulations

As noted above, the EPA adopted a modified version of the SWICS methodology for calculating site-wide LFG collection efficiency at landfills under the GHGRP. That methodology uses a collection efficiency of 60 percent for area with daily cover, 75 percent for areas with intermediate cover, 95 percent for areas with final cover, and zero (0) for areas without gas collection. The collection efficiencies already adopted by EPA in federal regulation are significantly higher than the collection efficiencies of 20 and 35 percent advanced by the Sierra Club, Covanta, and ERC.

Direct Measurement

Finally, Covanta suggested in comments that direct measurement of landfill emissions should be incorporated as a requirement in the final standards. The comment letter notes several studies that have used remote sensing technology such as Vertical Radial Plume Mapping (VRPM) and Other Test Method 10 (OTM-10) to measure landfill area emissions.

While the industry agrees that significant fieldwork has been conducted using remote sensing technology, the Covanta comments minimize the challenges in broadly using these methodologies at landfills. For example, the Covanta-funded study, *Quantifying Methane Abatement Efficiency at Three Municipal Solid Waste Landfills* (EPA/600/R-11/033, January 2012) characterizes OTM-10 as a ‘breakthrough in technology’ that has “resulted in the ability to more accurately quantify” emissions, but fails to note that the technology requires extensive preparation and characterization of the topography and meteorology at subject landfills. Covanta also references the study to argue for assuming lower LFG collection efficiency rates, although the study does not provide sufficient support.

Waste Management (WM) provided comments to EPA’s Office of Research & Development on the study in a letter dated September 28, 2012 (Kelly et al., 2012). The letter summarized key technical concerns including first, that the limited scope of the research, summarizing five measurement

campaigns at only three southeastern landfills, does not provide a sound basis for the document's broad policy conclusions and proposed next steps. Second, WM voiced significant scientific and technical concerns about the measurement methods and physical conditions at the sites, which call into question the validity of the reported measurements.

At EPA's request, WM in a letter to the Office of Air Quality, Planning and Standards, assessed the appropriateness of developing regulatory requirements for the use of the OTM-10 direct measurement technique (August 23, 2011). WM described key challenges in using the technique including that OTM 10 measurements can assess only 5 to 20 percent of the total landfill surface. This makes the technique subject to criticism regarding its spatial representativeness in determining emission rates. WM also described the difficulty in the set-up and use of the TDL equipment due to the complex topography associated with landfills and the strong influence weather (e.g., wind direction and speed, precipitation, barometric pressure) plays on the ability to obtain usable TDL readings. The large source size, heterogeneous source area, and interference from proximate or distant sources of emissions (from an adjacent landfill cell outside the measurement area or a wholly separate site) can create very significant uncertainties in measuring methane emissions at a landfill. Additionally, the process of direct measurement is expensive and may prove cost-prohibitive for widespread practical application.

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12. De La Cruz, F., Green, R., Hater, G., Chanton, J., Thoma, E., Harvey, T., Barlaz, M. (in final EPA review, 2015); Landfill Methane Emissions: A Comparison of Field Measurement to Gas Production Models.
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15. Peischl, J. et al. (2013); Quantifying Sources of Methane Using Light Alkanes in the Los Angeles Basin, *Journal of Geophysical Research: Atmospheres*, Vol. 118, 4974-4990.
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17. Kelly, K., and Van Kolken Banister, A. (2012); September 28, 2012 comment letter to Richard Shores, U.S. Environmental Protection Agency on “Quantifying Methane Abatement Efficiency at Three MSW Landfills, EPA/600/R-11/033.

Shorter Lag Times for Wet Landfills Are Not Warranted or Justified

We are concerned that EPA is continuing to target “wet” landfills for additional requirements under the proposed NSPS/EG. In our comments on the ANPRM in 2014, we explained why EPA should not reduce the initial lag times for GCCS installation at landfills located in wet climates, landfills that recirculate leachate, or landfills that add other liquids to accelerate waste decomposition. We highlighted ambiguity in the definition of wet landfills, the oversimplification that results from definitions that rely primarily on measured precipitation and leachate levels, and the potential overlap in requirements between the Landfill NSPS/EG and the Subpart AAAA NESHAP.

We believe EPA’s proposed definition of wet landfills focuses too narrowly on precipitation and leachate variables, and fails to consider the many other factors that influence moisture content in landfills. Our comments noted that precipitation is not well correlated with landfill moisture levels. Other factors, like waste acceptance rates, the amount of moisture in the disposed waste, cell size, cover type, and cover timing also have a significant impact on landfill moisture levels. We strongly urge EPA to avoid simplistic definitions that fail to account for the complexity of the landfill environment. EPA should not define landfills as “wet” based only on precipitation of over 40 inches per year. EPA should base its approach on sound science and analysis.

Recent research efforts conducted by EPA, in cooperation with solid waste industry and academic researchers (De la Cruz, F.B., Green, R., Hater, G., Chanton, J., Thoma, E., Harvey, T., and Barlaz, M., *Comparison of Field Measurements to Methane Emissions Models at a New Landfill*) at a landfill located in a wet climate (Southeastern U.S.) indicate that FOD models over-predict emissions from waste that is less than four years old by at least a factor of four. The study, to be submitted to the *Journal of Environmental Science and Technology*, compared field measurements (tracer correlation and eddy covariance) to FOD models using a k value of roughly 0.05. The study authors concluded

that additional field data on methane production and emissions is necessary to establish a path forward to updating the model parameters and methodology for estimating emissions.

We are also concerned that EPA has failed to provide any discussion of the cost and cost effectiveness of shorter lag time requirements. From our review of other proposed changes to the NSPS and EG, we have concluded that the more stringent requirements come with significantly higher costs. EPA should not finalize shorter lag times at wet landfills without providing additional information to the regulated community and other stakeholders.

Issues Associated with Applicability and Effectiveness Dates, and Implementation Issues

EPA has proposed to change the applicability date from 5/30/1991 to 7/14/2014 for new or modified sources. With this approach, very few sites will be initially subject to the proposed NSPS (Subpart XXX) and majority of sites will be subject to the proposed EG rule (Subpart Cf).

EPA has not followed a consistent approach historically in regards to updating NSPS rules. In some cases, EPA has updated the existing NSPS rule and retained existing applicability dates (40 C.F.R. 60 Subpart Eb¹, 40 C.F.R. 60 Subpart F). In other cases, EPA has retained the existing NSPS and applicability date (40 C.F.R. Subpart G: August 17, 1971 – October 14, 2011) and created a new NSPS rule and applicability dates for affected sources (40 C.F.R. Subpart Ga: after October 2011). EPA has never created a new EG rule to replace an existing EG rule. Further, EPA has updated EG rules but has not changed the applicability date (40 C.F.R. 60 Subpart Cb²).

EPA has now aligned the rule requirements and rulemaking schedule for the NSPS and the EG so there is no substantive difference in requirements between the rules. If EPA were to retain the 1991 applicability date for NSPS sites, then the proposed EG (Subpart Cf), including the Closed Landfill subcategory, could be incorporated in the NSPS (Subpart XXX) and EPA could retain the existing EG, (Subpart Cc) for sites that did not open or modify (expand the landfill) since 1991. This approach would significantly reduce regulatory burden for state and local agencies (they would not be required to prepare state plans or revise existing state rules) and EPA would not be obligated to prepare, issue and implement a Federal Plan.

Effective Date of Final NSPS Rule and Compliance Dates

There is no issue with the effective date of the NSPS rule as long as EPA includes clear and reasonable compliance timelines for submitting new or revised reports. The proposed NSPS rule includes a 90-day compliance timeframe for submitting design capacity reports and NMOC emission rate reports, which is consistent with WWW. The rule continues to assume these are first time reports and does not address whether sites already subject to NSPS WWW requirements must re-submit reports.

Design Capacity Reports

Sites that commenced operation prior to date of the final NSPS XXX rule (and submitted design capacity reports per NSPS WWW/EG Cc requirements) should be exempt from re-submitting design capacity reports. The design capacity report is required only to determine whether a site is subject to

¹ FEDERAL REGISTER Vol. 71, No. 90 May 10, 2006 pp. 27324-27348

² Ibid

the NSPS/EG rule and Title V requirements. This report is not relevant for sites where NSPS/EG and Title V requirements have already been triggered by an exceedance of the design capacity exemption. Furthermore, preparing and submitting the report would add unnecessary burden to the sites and regulatory agencies.

NMOC Emission Rate Reports

Sites that installed GCCS under NSPS WWW/EG Cc requirements should be exempt from re-submitting the NMOC emission rate report. The emission rate report is required only to determine when the site must install a gas system to control NMOC emissions. This report is not relevant for landfills with existing NSPS/EG-required GCCSs and preparation and submittal would add unnecessary burden to the sites and regulatory agencies.

For sites that are currently subject to NSPS WWW but have not triggered NMOC threshold requiring GCCS installation, EPA should continue to require annual or 5-year periodic reports and allow sites to use valid test data for the reports. The rule should not require new Tier 2 or Tier 3 testing if the test data and supporting information is still valid. Sites should have the option to complete additional Tier 2 or Tier 3 testing. Allowing sources to use previous emissions test results to demonstrate compliance with the NMOC threshold, if revised, is consistent with federal rules (40 C.F.R. 60 Subpart Ec) FR Vol. 74, No. 192 October 6, 2009 pp. 51368-51418

GCCS Design Plans and Gas Treatment System Monitoring Plans

Sites that installed GCCS under NSPS WWW/EG Cc requirements should be exempt from re-submitting the GCCS Design Plan. The Design Plan is required only to present a conceptual design of the GCCS that was used as basis to install the existing GCCS; therefore this report is not relevant. Preparation and re-submittal would add unnecessary burden to the sites and regulatory agencies.

EPA offers two criteria for when an affected source must update and submit its design plan: 1) within 90 days of expanding operations to an area not previously covered by the design plan; and 2) prior to installing or expanding GCCS in a manner other than one described in a previously approved design plan. The criteria and timeframes appear reasonable; however, we again urge EPA to provide alternatives to agency approval of Design Plans given the vast number of plans that have received no formal agency approval, which results in compliance uncertainty. The existing rules already require WWW and EG sites to report expansions made to the GCCS on semi-annual basis and to update the as-built maps that reflect current GCCS operations.

Currently, there is no compliance timeframe proposed in NSPS Subpart XXX for submitting a gas treatment, system monitoring plan. As this is a new proposed requirement, we are concerned that the proposed rule offers no transitional compliance period for existing sites with LFGTE projects that trigger Subpart XXX applicability upon expansion or modification. We recommend EPA allow for at least 120 days to prepare a treatment system monitoring plan. We again do not recommend EPA require agency approval of the plans, as further described in previous comments and below.

New Monitoring and Recordkeeping Requirements

If EPA finalizes any changes to monitoring and/or recordkeeping requirements in the NSPS, sites that installed GCCS under WWW requirements will require lead time to install new equipment (where applicable), develop/implement new processes and train staff/third party contractors before the site can comply with the new requirements. It may not be possible for a site to comply immediately upon the publication date of the final NSPS rule nor should EPA expect a site to immediately comply where monitoring and/or recordkeeping requirements are revised. For example, changes to SEM

requirements should be implemented in the subsequent calendar quarter after which the rules are published. Assuming the NSPS rule is published in July 2016, a site would implement any new SEM and recordkeeping requirements during the fourth quarter.

The undersigned organizations appreciate your consideration of these supplemental comments and hope the Agency finds them useful as you finalize the MSW Landfill NSPS and EG rules. Please feel free to reach out to us if you have any questions. We look forward to continuing to work with you as we prepare to implement the new rules.

Sincerely,

Waste Management
Republic Services
Advanced Disposal
SCS Engineers
Weaver Consulting Group
Cornerstone Environmental Group
National Waste & Recycling Association
Solid Waste Association of North America
The Sanitation Districts of the County of Los Angeles